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THE LATENT VITALITY OF SEEDS.

M. CASIMIR de Candolle has lately published an interesting paper entitled *La Vie Latente des Graines* (Archives des Sc. Phys. et Nat.; Bibl. Univers., 1895), in which he comes to the conclusion that if the external conditions necessary for the vital activities of seeds be absent for a long time they may be totally arrested, but yet the seeds may be alive and re-enter an active course of existence after, perhaps, an indefinite period. His experiments were conducted in a cold room of a meat refrigerator, having made a preliminary one as follows:—Three lots of Peas and Haricot Beans were placed (1) in free air; (2) in a tube of air, but sealed; (3) in pure carbonic acid. After two years (1) had increased in, weight, and nearly all germinated; (2) had lost weight while a smaller proportion germinated; air now containing 11·4 per cent. of oxygen, and 3·8 per cent. of carbonic acid; (3) none came up. He asks the question whether the enfeebled vital activities had ceased before the end of the experiment, so that respiration and assimilation had completely stopped; if so, the protoplasm must become quite inert. He believes that to be the case. He now experimented with an intensely cold temperature, having previously determined that Peas, Haricots, and Fennel seed would germinate after an exposure of four days to a temperature of 148° F. He wrapped up some Wheat, Oats, seeds of Fennel, of the Sensitive plant, and of Lobelia Erinus in tin foil. All were well packed in a cylindrical iron box of 3½ cubic feet capacity: the lid being hermetically sealed. This was placed in an open wooden box for protection. The whole was subjected to an intermittent steam of intensely cold air coming direct from the refrigerator, from May to September, 1894, or 118 days.

The cold air was continued from eight to twenty hours per day; the average time being fourteen hours. On the greatest number of occasions (sixty-eight times), the cold was prolonged for twenty hours. The lowest temperature reached was—65° F., and the highest—36° F.

In the intermediate periods the warming was very slow, for the temperature scarcely passed freezing-point at the end of two to three hours, after stopping the machine. Conversely, the cooling of the box was very rapid, as it was directly exposed to the current of cold air.

M. De Candolle asks the question whether the box could check the cooling. As an experiment in this direction, he completely filled a box with corn. The lid, being hermetically sealed, was then pierced to allow the bulb of a thermometer to pass through it, and the hole was then plugged with cotton-wool. He then observed the thermometer outside a window. The rate of cooling varied much according to the initial temperatures, and in proportion as the exterior air was calm or agitated. Thus, in a strong north-east wind, the temperature of the room being 18° Fahr., and 17·5° Fahr. outside, it took twenty-six minutes to ascend to 21° Fahr. On a calm day when it was 53·6° Fahr. in the room and at freezing point outside, it took one hour and eight minutes to descend to freezing point.

But, as M. De Candolle observes, this experiment does not bear much, if any, analogy to the cooling by the air from a refrigerator, for the box was placed in the direct current from it. Moreover the seeds were surrounded by a metallic paper, greatly facilitating the conductibility of the box. He thinks, therefore, that not more than a quarter of an hour would be required to put the temperature of the box in equilibrium with that of the cold air. On taking out the seeds, they were at once sown. Nearly all the Wheat, some of the Oats, and some Fennel seeds quickly appeared. Of sixty-six seeds of the Sensitive plant, thirteen only came up; while of numerous Lobelia seeds, only ten germinated

The failure of the seeds of the Sensitive plant was not solely due to the cold, as many failed to germinate, while many Lobelia plants grew in a control experiment. The conclusion the author arrived at was that life, as expressed by vital functions, was completely arrested for a time; the protoplasm was inert, and could not either respire or assimilate.

The cause of some being killed was that their protoplasm had not yet become completely inert.

If this result be true, then, one would expect that seeds could be maintained with impunity in a medium unsuitable for respiration, provided there was nothing which could exert a deteriorating effect upon the internal chemical processes, as does carbonic acid.

He, therefore, tried the effect of plunging seeds in mercury; thus, 8 grains of Wheat were placed below 2·5 cm. of mercury for one month (October 19 to November 19). Of these four only germinated. Of 5 grains of Wheat under 13 cm. of mercury, from November 27 to December 28, four grew. Of 5 grains of Wheat under 5 cm. of mercury, from February 5 to May 5, all grew. Similarly 13 grains of Cress, under 5 cm. of mercury, for two months, all germinated.

This experiment, therefore, as that with a low temperature, shows that seeds can exist in a state of complete vital inertia; and that the internal changes of metabolism can be arrested, as long as the necessary external conditions of temperature, moisture, &c., are withheld.

M. De Candolle thinks that this state of chemical and vital inertia may last, perhaps, indefinitely. He then gives the following cases in illustration:—M. A. P. De Candolle mentions a case where grains of the Sensitive plant germinated very well after upwards of sixty years repose (*Physiologie*, p. 621). Girardin has seen Haricot Beans germinating which were taken from the herbarium of Tournefort, where they had lain for a century. In 1850 Robert Brown sowed, for curiosity, some seeds from the collection of Sir Hans Sloane, 150 years old, several germinated, as for example, one of Nelumbium speciosum, of which the plant is still preserved in the Natural History Museum. He refers to the popular notion of "Mummy Wheat" having germinated, only to refute it, adding, that it appears that the grains were sterilised before being placed in the tomb—but he does not give the proof of this. The present writer finds the starch grains to be perfectly sound, and to colour readily with iodine; so that the grains could not at least have been boiled. The most extraordinary case to which he refers was observed by Prof. De Heldreich (*Garten Flora*, 1873, p. 323), the Director of the Botanic Garden at Athens. In botanising about the mines of Laurium he discovered in 1873 a new species of Glaucium, G. Serpieri. It made its appearance from under a thick layer of volcanic scoria, to which he would assign a date of 1500 years. He concludes with a reference to the investigations of M. Peter, who took soil from the interior of forests; and, after taking every precaution, found that soil from ancient forests gave rise to woodland species only; but soil from recent forests supplied species of open plains and fields, according as the forest had replaced these respectively. Admitting that his experiments did not decide the question, M. Peter thinks it would be safe to allow at least fifty years of duration of arrest of vital activity in the seeds buried in the soil of forests.—*Gardeners' Chronicle.*

COMMERCIAL FIBRES.

BY D. MORRIS, C.M.G., M.A., D.SC., F.L.S., *Assistant-Director of the Royal Gardens, Kew.*

PLANTING AND BANANA FIBRES.

Besides Manila hemp, produced by *Musa textilis*, other species produce fibre useful for cordage purposes, for mats, and for making coarse paper. The plantain, in Jamaica (*Musa sapientum*, var. *paradisiaca*), produces a white, glossy fibre at the rate of 1·81 per cent. of the gross weight. The price of the best plantain and banana fibres is, however, seldom above £12 per ton, and they would only fetch this price when there is a high demand for white-rope fibres, and a short supply of Manila and Sisal hemps. In spite of this, it is worthy of consideration, whether the immense number of banana stems cut down every year in the West Indies (estimated at 50,000,000) could not be utilised for their fibre. It is evidently not sufficiently good to compete with first-class rope fibre, but it might possibly be used for making coarse paper, as a packing material, or even for the manufacture of *papier maché*. The Abyssinian banana, *Musa Ensete* yields a somewhat weak and dull-looking fibre. *Musa Bajoo* s grown in Southern Japan for its fibre, which is woven into cloth of an exceedingly durable character. *Musa sumatrana*, forming an impenetrable jungle in the Malay Peninsula may eventually prove a useful fibre plant. A banana, native of the Solomon Islands, yields fibre which is woven into ornamental garments, bags, and sleeping mats.

PINE-APPLE FIBRE.

The common pine-apple (*Ananas sativa*) has a resette of 30 to 50 narrow, strapshaped leaves, from 3 to 5 feet long. These contain an abundance of fibre which, though somewhat difficult to extract, is possessed of great merit. It is finer and stronger than that yielded by almost any other plant except China grass. In the East Indies it is manufactured into a beautiful fabric known as "piña" cloth. In the Straits Settlements, Sierra Leone, and some other localities in the Old World, this tropical American plant has become thoroughly naturalised. The leaves in these semi-wild plants are more highly devoted than in plants cultivated for the fruit, and hence are better suited for fibre purposes. In the Philippines it is also customary to pluck the fruit before it matures; this is said to cause a considerable extra developement of the leaves.

Pine apple plants are grown in every tropical country and their cultural treatment is well known. They are easily propagated by means of offsets from the base. The leaves are fully developed in about 12 to 18 months, and each plant could yield at least 10 to 20 leaves every year. For piña cloth the fibre is extracted by scraping by hand, then washed and laid out to bleach in the sun. The steeping, washing, and drying are repeated until the fibres are considered to be properly bleached. The fibre bundles are very fine, transparent, strong, and supple. The ultimate cells are from 2 to 5 mm. long, fine, uniform in diameter throughout, solid and glossy.

A sample of pine apple fibre of excellent and extraordinary length (6 feet), grown at Malacca, was brought to this country by Mr. Derry in 1893. It was stated, in the "Kew Bulletin," 1893, p. 368, that one manufacturer was hopeful of using 1,000 tons a year or more of this fibre at the price of £30 per ton, delivered in London. "Pine-apple hemp" is a regular article of export from Formosa to Swatow, where it is made into fine "grass cloth," esteemed for its coolness as a summer wear.

CARAGUATA FIBRE.

Caraguatá (*Bromelia argentina*).—The best fibre of Paraguay is "Caraguatá ibera." It is described as long and silky. There is frequent mention of it in works of travel, and fine specimens were shown in the Paraguay Court at the Exposition Universelle, held at Paris in 1889. Specimens of the plant, abundant in a wild state, were received at Kew in 1890 and it was found to be a new species of *Bromeliaceæ* allied to the pine-apple, which it resembles both in habit and character of the leaves. In a report furnished to the Foreign-office by Mr. Arthur Herbert (No. 1,006, 1892), it is stated "the *ibera* is a sort of caraguatá, and its fibre is of a finer quality than that of its congener, but neither of them has obtained any importance in commerce owing to the cost of cleaning and separating the fibre from the leaves. Several attempts have been made but so far without any great success. From the interest that has been awakened in this product in European markets it would seem to deserve a more serious study, and the opinion seems to prevail that with improved machinery and more skilful administration more profitable results might be obtained." Any machinery that could successfully extract pine-apple fibre could also clean the caraguatá fibre. It is anticipated by those acquainted with the local circumstances that caraguatá fibre will some day form an important article of export from Paraguay.

OTHER BROMELIA FIBRES.

According to the "Kew Bulletin," 1887, April, p. 8:—

"There are several samples of a wild pine-apple (*Bromelia sylvestris*, Willd.) from the West Indies

and Central America at Kew, but there is no record of their commercial value. A sample supposed to be from this plant was lately sent from Trinidad, upon which the brokers reported as follows:—'Not yet in commercial use, but destined, we think, to a successful future; fine, soft, supple fibre, strong and good colour, ample length; say £30 per ton and upwards.'

"The fibre of the Jamaica Pinguin *(Bromelia Pinguin* L.) would appear not to be of high value. The plant covers hundreds of acres in the plains and lowlands of Jamaica, and an effort was made some time ago to prepare the fibre for commercial purposes. The report of brokers upon a sample of 90 lb. was as follows:—'A long, towzelled, weak fibre, of bad colour, coarse, no strength, and only fit for breaking up. Similar to St. Helena hemp tow, but not so good. We should think £12 to £10 per ton to the utmost value.' Several samples of this Pinguin fibre from Jamaica and elsewhere, cleaned both by hand and by machine, are to be seen in the Kew Museum, No. II."

Another bromeliad *(Karatas Plumieri)* with leaves 8 to 10 feet long, armed with distant, incurved teeth, is common in Tropical America. It is a well-known and valuable fibre plant. It is said to be used by Indians in making the finest hammocks in Central America, Guiana, and Brazil.

BOWSTRING HEMPS.

The species of *Sansevieria* yielding Bowstring hemps have creeping rhizomes and a rosette of leaves of a fleshy character, sometimes flat, concave, round, or spear-shaped. The flowers are in spikes or clusters, white or green. The leaves are dark green, more or less succulent, and banded or mottled with white or black markings. They abound in a very valuable fibre, remarkable alike for fineness, elasticity, and strength. The Sansevierias are chiefly of African origin, but one at least may be Indian. Some of the species are already widely distributed in tropical countries. They are capable of being propagated very readily. Usually the rhizomes are divided and planted; plants may, however, be raised from seed, or, better still, from the leaves, which, if cut into pieces about two or three inches long, readily take root in moist situations. Plants may be put out at 3 or 4 feet apart. The first leaves for cutting may be produced in three to four years. In India, with *Sansevieria roxburghiana*, 1 lb. of fibre was extracted from 40 lb. of small green leaves. It was calculated that "one acre would yield 1,613 lb. of clean fibre at a gathering, two of which may be reckoned on yearly." So far Sansevieria fibre is not in commerce. It is, however, used largely in India—where it first received the name of bowstring hemp—in Ceylon, and on the West Coast of Africa for twine and cordage, and is regarded as most valuable. The fibre of *Sansevieria cylindrica*, known in Angola as "Ifé," is said to be the best fitted for deep sea sounding of any fibre known. The special merits of the fibre yielded by each species will be mentioned below.

Konje Hemp *(Sansevieria guineensis)*.—One of the oldest and best known species. The mottled leaves are somewhat flat and leathery, about 3 to four feet long, 3 inches broad in the middle. On the Zambesi it yields "a valuable fibre similar to Manila hemp." It grows "in great abundance in many places, keeping to the shade of woods." In Mauritius, Jamaica, Cuba, and Trinidad it is semi-wild and yields excellent fibre. In Jamaica the return, under favourable conditions, is estimated at 1½ tons of dry fibre per acre, of the gross value of £45. Samples received in this country from Trinidad, in 1886, were valued at £20 per ton, but the colour and strength were not normal. Good machine-cleaned fibre from Cuba is said to have realised £30 per ton.

Sansevieria longiflora.—This plant is a native of equatorial Africa. The leaves are like those of *S. guineensis*, but usually larger or flatter, and not invariably blotched with green. The best distinction is the individual flower, which is 3½ to 4 inches long, while in *S. guineensis* it is only 2 inches long. Fibre from *S. longiflora*, grown at Kew, was described in 1887 as "very bright, clean, and strong; in every way a most desirable commercial article. It would compete with the best Sisal hemp for rope-making purposes. Value £30 per ton."

Pangane Hemp *(Sansevieria Kirkii)*.—The leaf is very horny in texture, with a brown edge, much mottled on both sides. This species was discovered by Sir John Kirk, who states, "It grows abundantly near Pangane on the mainland opposite the island of Zanzibar......It is used by the natives and yields a long and useful fibre." The robust habit and large size of the leaf of this plant render it very valuable for fibre purposes. Under exceptional circumstances a single leaf will attain the height of 9 feet. Fibre from a plant grown at Kew was valued in 1887 at £27 per ton.

Neyanda (*Sansevieria zeylanica*).—This has long been cultivated in Ceylon. The leaves are semicircular in transverse section, 1 to 2 feet long, dull green with a red margin, and copiously banded with white. The Singhalese use the fibre in numerous ways for string, ropes, mats, and a coarse kind of cloth. Generally the fibre is prepared by retting or by simple beating and washing. The small size of the leaves, and the difficulty of handling them in large quantities, would render this species of less value commercially than any of the preceding.

Ifé Hemp *(Sansevieria cylindrica)*.—This is a most distinct and curious-looking plant. The leaves are quite cylindrical and solid, about 3 to 4 feet long, and about an inch in diameter at the base. When growing they look like a cluster of sharp-pointed stems. The species extends across South Africa from Zanzibar to Angola. The fibre, as already stated, is very valuable. Specimens prepared from plants grown at Kew were valued at £28 per ton. *S. sulcata* is very similar, but the leaves are more slender, with rather deeper vertical grooves. The fibre is slightly weaker, and valued at £26 per ton.

SISAL HEMP.

Sisal hemp, Henequen, or Yucatan hemp, is produced by a species of *Agave*, native of Mexico, of which the common "American aloe" is the type. There are two, if not more, varieties cultivated for fibre. The chief one is the "Sacqui" (*Agave rigida*, var. *longifolia*). Plants were received at Kew in 1879, and again in 1890. The other is the "Yaxqui" (*Agave rigida*, var. *sisalana*). The former has leaves with side teeth, and a strong terminal spine; the latter has the terminal spine only; the edges of the leaves are smooth.

Cultivation.—These Agave plants are propagated either by suckers from the base of the stem, by seed, or by bulbils (called "pole" plants) produced on the flowering branches. The latter appear in the axils below the flower, and number many thousands. They remain in the parent plan until they are about four to six inches long, and sometimes much longer.

The land suited for the cultivation of Sisal hemp is entirely different from that required for Manila hemp. The best fibre districts in Yucatan possess an arid climate, with gravelly, stony, or rocky soils; they are only a few feet above the level of the sea; the summer heat is intense. It is claimed that the fibre is stronger and more abundant in dry, hot soils than in rich, deep soils. The plantations are formed with young plants about 18 to 20 inches high. These are put out in rows, at distances varying from 6 to 12 feet apart, equal to about 600 to 1,000 to the acre. Broad lanes are left here and there for the purpose of making roads or tramways, all converging on the factory, where the leaves are cleaned. A plantation begins to yield in three to five years, depending of the size of the plants when first put in, and the nature of the soil and cultivation.

Harvesting.—When the leaves are fit to cut 10 to 20 are taken from each plant, beginning from below. The cutting may be repeated two or three times a year according to the vigour of the plants. As soon as a plant shows signs of "poling" it is regarded as useless for fibre purposes. The pole is cut out and the remaining leaves are harvested soon after. To provide for the continuance of the plantation "it is the custom to place at the foot of each plant (when about three-fourths of its life are spent) a small plant which replaces the old plant when the

latter is removed." The period of the life of a plant may extend from five to ten years or more. Cutting the leaves too severely will accelerate the poling of the plant and thus destroy its usefulness.

Extracting the Fibre.—The leaf-cutters are paid at the rate of 25 cents per day for 200 leaves. The leaves are conveyed from the fields to the factory either on mule back or by means of light tramways. Each mule carries 200 leaves each trip; a task of 10,000 leaves requires ten trips, with five mules each. On the tramway a mule can draw a waggon with 3,000 leaves and make five trips a day. Most of the large fibre estates in Yucatan are provided with light portable railways on the French Decauville system. The more common machine used for extracting the fibre is the "raspador." It is a rude piece of machinery consisting simply of a wheel like a four-foot pulley with a six-inch face. Across the latter are fitted pieces of brass an inch square and six inches long, running across the face about a foot apart. This wheel runs in a heavy wooden frame and makes about 110 revolutions per minute. The leaf is put in at one end of the machine and held by a strong clamp while exposed to the beaters. The pulp is soon crushed out of it, leaving only the fibre. The leaf is then reversed and the other end cleaned in the same way. The average work of one machine, requiring $1\frac{1}{2}$ horse-power, is 7,000 to 9,000 leaves per day with two men feeding. It is estimated that 1,000 ordinary leaves will yield 50 pounds of dry fibre. Exceptionally they will yield 100 pounds, but from strong plants from five to seven years old 75 pounds would be a good yield. After the fibre is cleaned it is spread out in the sun to dry. It is afterwards pressed into bales by lever or screw presses or by hydraulic pressure. The latter method is becoming general. The bales vary from 350 to 400 pounds, with a cubic measurement of 22 feet. It is calculated that the total cost of growing and cleaning the fibre and of delivering it at Progresso, the port of shipment, is about $3\frac{1}{2}$ cents to 4 cents per pound Mexican money (about $1\frac{1}{4}$d. to $1\frac{1}{2}$d. English money).

Position of the Industry.—The fibre plantations in Yucatan are estimated to cover about 24,000 acres. The total yield in 189 was 350,000 bales of 375 ld. each giving a tota eight of 131,250,000 lb. For the whole country, this would be at the rate of 760 lb. per acre. The actual return is probably a good deal more, as the total area under cultivation is not a'l yielding fibre. The estimated yield of the Yucatan plantations in 1895 was 400,000 bales. A State duty of 20 cents per 100 lb. is levied on hemp exported from Progresso. A detailed account of the fibre industry in Yucatan is given in the "Kew Bulletin," 1892, pp. 272-277, and 1893, pp. 212-218. The latter was prepared by her Majesty's Vice-Consul at Progresso. A general account of Sisal hemp plants, and efforts to start industries in various countries is given in the "Kew Bulletin," 1892, pp. 21-40. Attached to this is a return of the average price per ton (spot value) obtained for Sisal hemp in this country for each month from January, 1879, to December, 1891. The following is a brief summary, based on this return, brought down to September, 1895:—

Year.	Highest.		Lowest.		Average for the Year.	
	£	s.	£	s.	£	s.
1879..........	32	10	21	0	24	0
1883..........	29	0	24	0	27	0
1889..........	56	10	45	0	50	0
1894..........	20	0	15	0	17	10
1895...... Jan. to Sept.	17	0	13	0	14	7

The fall in prices, so marked in the United Kingdom since 1889, was equally prevalent in the United states. This will appear from the following:—

Price per lb. in	1892.	1893.	1894.	1895. to Sept.
New York.	Cents.	Cents.	Cents.	Cents.
Dec. 31.	6 to $6\frac{1}{4}$	$3\frac{7}{8}$ to $3\frac{15}{16}$	$2\frac{5}{8}$ to $2\frac{3}{4}$	$2\frac{1}{2}$ to $4\frac{5}{8}$

Note added.—The monthly report on Sisal on the 15th September, 1895, showed a more favourable tendency. The spot value was £16 to £17 per ton.

BOMBAY ALOE FIBRE.

Bombay Aloe (*Agave vivipara*).—The plant is a native of tropical America, but widely spread in the East Indies. It is extensively used as a hedge plant in India, in Bombay, and the North-West Provinces. The leaves are very long, narrow, and concave, with rather distant, brown teeth, and a terminal spine. Numerous bulbils are produced on the flower spike, hence the specific name. When white-rope fibres were in high demand, the fibre from *Agave vivipara* was prepared rudely by hand, and shipped from Bombay. It was, from the first, practically unsaleable. In 1890 the stock in this country had accumulated to over 1,000 tons. The prices quoted were from £5 to £12 per ton. As pointed out in the "Kew Bulletin," 1890, pp. 50-51, well cleaned fibre from this species was really worth at taht time from £25 to £30 per ton. The difference in price was entirely due to the character of the cleaning.

A very similar fibre to Bombay aloe fibre was imported this year from Natal under the name of South African hemp. It was probably yielded by *Agave americana*. It was of bad colour, not well cleaned, and almost unsaleable. It is useless to ship fibre of this character from any British possession.

MANILA ALOE FIBRE.

Manila Aloe (*Agave vivipara*).—The plant known locally as "Maguey" is the same as that yielding the Bombay fibre mentioned above. It is also cleaned by hand. The value of the Manila fibre has always been slightly higher than the Bombay fibre, owing to its being presented in a cleaner condition. In March, 1893, Manila aloe fibre was quoted at 17s. per cwt., while Bombay aloe fibre was dull at 8s. to 13s. per cwt. It was only possible to produce the former when the price of white-rope fibres was exceptionally high. Of late years it has almost disappeared from commerce. In the Philippines the aloe fibre is used for making strings for violins. It is important to distinguish between this fibre and Manila hemp. The latter is yielded by *Musa textilis*.

MAURITIUS HEMP.

The Green or Fœtid Aloe yielding Mauritius hemp (*Furcræa gigantea*) was introduced as a garden plant from South America, about 1790. It is known amongst the French as *Aloës vert*. In 1837 it had established itself spontaneously in many localities in the island. About 1872, the quantity of plants growing on abandoned sugar estates suggested their utilisation for fibre purposes. The first exports were 214 tons, of the value of £4,934. Since that time, with some fluctuations, due to the ebb and flow of demand, the Mauritius hemp industry has steadily advanced. The value of the exports is now about £50,000 annually. The plant has much the habit of an "Aloe," but the leaves are bright green in colour, and with no teeth or terminal spine. The leaves are often 4 to 7 feet long, and 5 to 8 inches broad in the middle. The flowers are greenish white, on a branched peduncle or "pole" 10 to 20 feet high. Bulbils are produced as in some species of *Agave*. The plant is chiefly propagated by means of these. Regular plantations are established on the same plan as those described under Sisal hemp. Plants that have "poled," are replaced by strong young plants from nurseries. The life of a plant is about seven to ten years. They are, therefore, cut for about four or five years before they pole. Overcutting the leaves tends to cause the plant to flower and die prematurely.

Fibre Machines.—The hemp industry in Mauritius was greatly advanced by the invention of local machines, called *grattes*. They cost about £20 each, and are worked by steam or water power. The grattes are on the same principle as the *raspador* of Yucatan, and consist of a drum, with bolted blades, which revolves at a great speed in front of a feed table, on which the leaves are placed, One gratte is served by two men, who work alternately; one of them must be left-handed. The out-turn of wet fibre for each machine is, on an average, about 94 lb. per hour; the out-turn of dry fibre per day of eight hours for each machine is 214 lb. The average cost of producing a ton of fibre ready for shipment in 1890 is 225 rupees. A full account of the Mauritius

fibre machine is given in the "Kew Bulletin," pp. 98-104.

Mauritius hemp is not largely used for cordage purposes. It has special application on account of its fineness and lustre, and is much used for ornamental purposes. The prices have been well maintained, in spite of the depressed condition of most fibrous substances during the last two years. In March, 1895, the quotations were:—"Good white, 21s. to 24s. per cwt.; fair, 17s. to 18s.; common, 14s." The imports in 1893 were 1,373 tons; in 1891, 684 tons.

Furcræa gigantea has been largely planted at the island of Anguilla in the Leeward Islands, under the direction of Sir William Haynes Smith, K.C.M.G. The plantation is adout 350 acres in extent, and the first crop of leaves will be shortly harvested. Should the price of Mauritius hemp be maintained, the Anguilla plantation is likely to be very successful.

SILK GRASS.

Although this term is sometimes applied to some species of *Bromelia*, it is more generally applied to *Furcræa cubensis*, one of the "green aloes," very similar in appearance to the plant yielding Mauritius hemp. It is a native of tropical America, and is cultivated in Jamaica and Tobago as a fibre plant. The leaves are 5 to 6 feet long, usually armed with strong prickles, but sometimes unarmed (as in the variety *inermis*), or with few prickles. The yield of fibre is at the rate of 2·5 to 3·15 per cent. Samples of silk grass fibre from Jamaica [illegible] 1884, at £27 per ton, and reported [illegible] to Sisal." Another species, *Furcræa selloa*, with leaves 3 to 5 feet long, armed with brown horny teeth, is plentiful in Ceylon, but apparently scarce elsewhere. The fibre yielded by it is very similar to that of *F. cubensis*. Unlike the latter, however, it has no unarmed variety, and is therefore not likely to be widely cultivated for fibre purposes.

NEW ZEALAND PHORMIUM FIBRE.

The plant yielding this interesting fibre (*Phormium tenax*) is very variable. It belongs to the liliaceous order, and has very long, sword-like leaves, growing in opposite rows, and clasping each other at the base. There are two well-marked varieties. One has leaves 5 to 10 feet long, bright green above, glaucous beneath, with the flowers red; the other has shorter leaves, with the flowers yellow. The flowering stem is large, and alternately branched. It rises out of the centre of the leaves, reaching a height of 12 to 16 feet. The fruit is a three-valved capsule, containing two rows of small, flattened black seeds.

The Maoris are said to recognise about 55 sorts of the Phormium plant to which distinct names are given. The accepted number amongst Europeans is much less. Each shoot has five leaves, and about ten shoots go to a clump; there are therefore about 50 leaves in a clump. Exceptionally the leaves may be 10 feet high, but usually they are from 5 feet to 7 feet hige. So far the Phormium plant is not regularly cultivated. The fibre is prepared wholly from wild or semi-wild plants. It is recommended to start plantations under favourable conditions, and make Phormium one of the established crops of the country. By such means it is anticipated that the leaves will be more uniform in character, and capable of yielding a better class of fibre.

Phormium has been the subject of extensive investigation in New Zealand for many years. Numerous experiments have been undertaken with the view of improving the methods of preparation, and extending the application of the fibre. The results have not been successful. The subject is still occupying the serious attention of the New Zealand Government. In 1893 the following premiums were offered:—(1) £1,750 for improvements in mechinery which will materially reduce the cost of production of commercial fibre; (2) £250 for a process for utilising the waste products of the industry. The results of the trials in connection with these premiums have not yet been published. It is probable that experiments carried on in this country with fresh leaves would be more successful. It is to be expected that the conditions in New Zealand, in a comparatively new community, devoted chiefly to agricultural pursuits, are not so favourable for inventions as in the large manufacturing centres of England. A suggestion on this point is offered later.

It may be mentioned that the fibre of *Phormium* is neither a flax nor a hemp in the usual acceptation. It would be more correct to call it simply "Phormium fibre.' It is one of the oldest exports of New Zealand. Between 1828 and 1832, although New Zealand was then visited only by whalers and a few traders, no less than £50,000 worth was shipped to Sydney alone. At that time the Maori hand-dressed fibre fetched a high price in the English market, under the name of "New Zealand flax." The Maoris were careful in the selection of the leaves, taking only those in which the fibre was properly ripened, instead of cutting over the whole plant indiscriminately and at all seasons. Machine-dressed fibre did not come into commerce until 1861, and then only to supply the deficiency in Manila for rope-making. It is estimated that an acre will yield about ten tons of sun-dried leaves, and that the usual yield of fibre is at the rate of 12 cwt. per acre. Phormium is pre-eminent for its high yield of fibre; this is at the rate of 15 to 20 per cent. of green leaves. The old Maori fibre was so well prepared that it was capable of being made into damask and towelling equal to fairly good linen. Specimens of these are in the Kew Museum. The machine-dressed fibre is defective in many respects, [illegible] for the manufacture of twine [illegible] binding machines. It is felt that the full value of the fibre can only be obtained by the use of a combined scraping and chemical process applied to carefully selected and properly matured leaves. This is well brought out in the following extract from the "New Zealand Official Year Book" for 1894:—

"The greatest improvement of the present system will be effected by the cultivation and careful selection of the leaves, and by the substitution of a chemical retting process for the prolonged owashing and sun-bleaching which at present obtain. .. .. .. The sodic-sulphite process suggested by Mr. Cross appears to be the most promising. The advantage of this process over any other is the very high yield of fibre it achieves, which exceeds one-fourth of the weight of the green leaf, no other process having yielded more than one-sixth. The quality of the fibre produced resembles the native-made fibre in lustre and strength. For the future, if the phormium plant is to become a source of fibre supply for the world' market, its cultivation must be established in favourable situations. The natural supply is now difficult to collect, and still more difficult to renew and perpetuate."

The shipments of Phormium are variable. Owing to the improved demand for fibres generally, the number of Phormium mills in New Zealand increased from 30 in 1886, to 177 in 1891. The approximate value of the industry during the same period increased from £13,094 to 234,266.

The exports of Phormium for 1881, and for the years 1888-93, showing the quantities and values, were as follows;—

Year	Tons	£
1881...... .	1,308	26,285
1888........	4,042	75,269
1889........	17,084	361,182
1890........	21,158	381,789
1891........	15,809	281,514
1892........	12,793	214,542
1893........	12,587	219,375

The figures since 1893 have shown a remarkable falling off in exports both to this country and America. The latter imported only 7,000 bales in 1894, as against 70,915 in 1893.

A careful investigation of Phormium fibre was undertaken by Mr. Cross in 1886. The results are published in the Reports of the Royal Commission of the Colonial and Indian Exhibition, 1887, pp. 373-376. As compared with Irish flax Phormium fibre contains a lower per-centage of cellulose, the actual figures being, Irish flax 80·2 per cent., Phormium 65·7 per cent. This cellulose in Phormium is also

shown to possess a lesser stability than in flax. It is pointed out there is a very close structural resemblance between Phormium fibre and Manila fibre, so that in case Phormium may not be so useful as flax for the higher textiles it may be brought into more active competition than at present with Manila hemp as a white-rope fibre. The structural resemblance between Phormium and Manila hemp above noticed is corroborated by what takes place in commerce, "Phormium," writes one authority, "mixes well with Manila. When the demand in the States for binder twine runs on Manila then New Zealand Phormium is in such demand for mixing that it may go above Sisal in price."

The outlook in this direction is, however not very promising. The supply of Manila, as well as Sisal hemp, could be considerably increased if prices went up, as there are large tracts of land still available for cultivation, and the labour supply is both cheap and abundant. Further, the question of freight has to be considered. Freight on New Zealand Phormium to the United States in 1892 was £4 10s. per ton, while on Sisal it was only £1. Again, by sailing vessel to the United States the freight on Manila was only £1 12s. 3d. per ton. By way of England it is more. The best opening for Phormium is evidently in the direction of supplying a good fibre for textile purposes, and here the field, at present at least, is not so fully occupied.

The prospects of the Phormium industry are very fully discussed in a paper presented to the Houses of General Assembly in New Zealand (H. 22, 1892), containing correspondence with the Agent-General in London. The latter states:—

"There are a number of skilled persons who, if they had sufficient inducement and full and proper opportunity [in this country] for ascertaining the nature of *Phormium tenax*, would direct their attention to the discovery of a means whereby the plant could be effectually and economically cleaned, so as to enable it to compete with Manila and Sisal."

He then offers the following suggestion:—

"It appears to me that what is wanted is the cultivation of the plant itself in this country to such an extent as would provide sufficient materials for the purpose of supplying those whose skill and attention would be directed, on sufficient inducement being offered, to the discovery of proper machinery for preparing the fibre for the market."

It may be added that the plant grows very freely in the South of England, the South of Ireland, and many localities with a warm climate south of the isothermal line of 51° Fahr. A plot of about five acres in extent would be amply sufficient to supply leaves for experimental purposes. The importance of the interests concerned would fully justify the New Zealand Government to act upon the suggestion here given.

PALM-LEAF FIBRES.

Several species of palms with feather-winged or pinnate leaves, are utilised for the fine fibre contained in the leaflets. This fibre is fine and hair-like, very soft, and, when unbleached, closely resembles flax. It is composed of the fine fibro-vascular bundles running through the substance of the leaflet. It is deftly extracted by hand in the young state before it is hardened by exposure to the sun. The process is slow and tedious, but the value of the fibre is undoubted. It is remarkable for great strength and durability.

Oil-palm Fibre (*Elæis guineensis*).—The oil-palm is the most valuable plant in West Africa. It is distributed in a wild state over the greater part of tropical Africa. The yield in palm oil and palm kernels is of the annual value of about £2,000,000 sterling. The fibre from the leaflets of the oil-palm has long been known in West Africa. Only small samples have occasionally reached this country. A very clear and graphic account of the method of extracting the fibre is given in the "Kew Bulletin," 1892, pp. 62-67 (with wood-cuts). The young leaflet is, first of all, deprived of the mid-rib for a short distance below the apex, and it is then split horizontally so as to expose the fibre-vascular bundles. These are taken up one by one, and usually twisted, at once into a thin cord. If not so twisted, they are kept in small tufts, and eventually made up into a bundle. The threads are "as fine and tenacious as human hair." It is a hard day's work to prepare six ounces of this fibre from 36 lb. of the raw material. It is estimated that the actual cost of this hand-made fibre cannot be less than about £75 per ton. It is almost exclusively used for making fishing lines and fine cord. A sample submitted to Messrs. Ide and Christie, in June, 1891, was described as of "great strength and fineness, and, if really spinnable, worth £50 to £60 per ton." This must be regarded as one of the most valuable and lasting of tropical fibres.

Gri-gri Fibre (*Astrocaryum* spp).—In the West Indies, at St. Vincent, and on the Atlantic slopes of Central America the Caribs extract a fibre from the young leaflets of the Gri-gri and other palms identical in character with that of the oil-palm. Demonstrations in extracting fibre were given by the Caribs sent from St. Vincent to the Jamaica Exhibition, 1891. It is evident that the process is widely known amongst native races. Everywhere the fibre is regarded as most costly and durable. A fine fibre is extracted also from the leaflets of *Astrocaryum Tucuma* in tropical South America. This is knitted by hand into a compact web of so fine a texture as to occupy two persons three or four months in its completion. The handsome hammocks afterwards made from the web sell for £3 each, or even double that amount.

PALMYRA FIBRE.

A fibre very similar to West African bass, and nearly of the same character as Para and Bahia piassava, is obtained from the Palmyra palm, called by the Portuguese, *par excellence*, "palmeira," or "the palm tree" (*Borassus flabellifer*). In West Africa it is known as the Black Run palm. It is very tall, sometimes, but very rarely, branched, with large, fan-shaped leaves with spinous petioles. The fruit is nearly as large as a coconut, with one to three seeds. The Palmyra palm is widely distributed in India and Ceylon, but generally in a cultivated state. It is, however, truly wild in tropical Africa. In the East, it is a toddy or sugar palm. The young germinating nuts are cooked and eaten as a vegetable. The leaves are made into books, which contain the classics of the Pali and Singhalese languages. The timber is hard, and very durable; it is used for umbrella handles and walking-sticks. From the base of the petioles, or the sheathing leaf-stalks, is obtained a stiff, wiry fibre. This was at first called "bassine," to distinguish it from bass and piassava fibres. It came into notice as a commercial article in 1891, when the high prices of piassava induced the production of substitutes. At that time even split rattan, stained black, was requisitioned as a brush fibre. Palmyra fibre has steadily increased in quantity, and, contrary to what was at first anticipated, it has also risen in value. "The chief objection to Palmyra," wrote Messrs. Ide and Christie in 1892, "is that it lacks straightness, but experiments are being made in this country to overcome this defect, and should they prove successful it is claimed by importers and dressers that Palmya should, for wear, be found equal to the best Para." These anticipations have, to some extent, been realised. Palmyra now has practically taken the place of West African bass. The latter, on the 16th Sept., 1895, was "dull, business small, £14 to £23 per ton." Palmyra fibre, on the other hand, was "good, £26 to £31; medium, £22 to £25; common, £15 to £19 per ton."

The natives in Ceylon and India are evidently copying the worst practices of the Indians of Brazil in sending consignments of Palmyra fibre to this country in a damp condition. The result is that as one firm complains, "the bales, on opening, are found wet, and the fibre to a large extent perished and powdery." Should the practice continue, the industry will be seriously injured. The bales are press-packed, and iron bound; they weigh 1 to 3 cwts., and measure 10 to 30 cubic feet."

KITTOOL FIBRE.

The Kittool or Kittul palm of India and Ceylon (*Caryota urens*) is a stout handsome plant with a

smooth annulated stem, 30 to 40 feet high. It has broad leaves, with the leaflets obliquely cuneate. The fruit is small and reddish. It is a toddy and sugar palm, and also yields sago.

Mr. J. R Jackson, A.L.S., in "Commercial Botany," gives the following excellent account of the fibre yielded at the bases of the leaves of this plant:—"Kittool fibre," he says, "has been known in this country for some 30 or 40 years, but it is within the last 10 years that it has become a regular commercial article. When first imported, the finer fibres were used for mixing with horse-hair for stuffing cushions. As the fibre is imported, it is of a dusky-brown colour; but after it arrives here it is cleaned, combed, and arranged in long straight fibres, after which it is steeped in linseed oil to make it more pliable; this also has the effect of darkening it, and it becomes, indeed, almost black. It is softer and more pliable than piassava, and can consequently be used either alone or mixed with bristles in making soft, long-handled brooms, which are extremely durable, and can be sold at about a third the price of ordinary hair brooms."

The use of Kittool fibre is said to be spreading not only in this country, but also on the Continent. During 1895, Kittool fibre has not been much in demand. The values on the 16th September were quoted as follows:—"Long, 10d. to 10½d.; No. 1, 7d. to 7½d.; No. 2, 2d. to 2½d.; No. 3, 1d. to 1½d. per lb."

COCONUT FIBRES.

The Coconut palm (*Cocos nucifera*) is extensively cultivated in nearly all tropical countries. It exists in immense groves in Southern India, Ceylon, the Islands of the Eastern Archipelago, and Polynesia. Its cultivation is extending in the West Indies, and on the East and West Coasts of tropical Africa. The coconut palm is one of the first objects to be seen along the beach, and soon becomes one of the most familiar objects to travellers in the tropics. It is a valuable food plant for man and animals, and provides besides materials for the construction of houses, and numerous utensils in daily use. It has a cylindrical stem, usually gracefully curved, and attaining a height of 40 to 100 feet, surmounted with a crown of large feathery leaves. The plant is propagated by means of seed-nuts (the fruit); these germinate, if kept moist, in 3 to 5 months. The young plants are put out in their permanent places, when about 8 to 15 months old, at distances varying from 27 to 33 feet apart. The coconut begins to bear in 5 to 8 years. Usually, the nuts take from 8 to 10 months to mature before they fall from the parent plant. Each coconut palm bears from 30 to 60, and, very exceptionally, when well watered and manured, up to 100 nuts a year.

As shown above, the coir of commerce is yielded by the thick pericarp or outer fibrous covering of the fruit of the coconut palm. The word "coir" is said to come from the Malay *Kâyar*, a twisted product. Kayar is also the Tamil for a rope. Although coir was known in Europe in the 16th century, it was not until about 1842 that it was brought prominently into notice. St. George's-hall, Windsor, in that year was laid with coconut matting on the occasion of the baptism of the Prince of Wales. Later a great impetus was given to coir manufacture by the Great International Exhibition of 1851.

Coconut fibre is tough, elastic, easily manipulated within certain limits, and eminently suitable for manufactures where lightness, cleanliness, and great indestructibility are required. It is understood that coconut fibre will not bear bleaching. Various shades of colour are, however, obtainable by using different descriptions of natural unbleached fibre. In an ornamental mat in the Kew Museum the various shades are obtained by using dark Fiji coir, medium coloured Ceylon coir, and very light Cochin coir.

Besides being made into rough cordage, coir is used in combination with wool to give richness and effect to hearth-rugs and carpeting. It is also used for brushes and brooms for household and stable purposes, matting for sheep-folds, pheasantries and poultry yards, church cushions and hassocks, hammocks, clothes-lines, cordage of all sorts, string for nurserymen, nosebags for horses, mats and bags for seed-crushers, oil pressers, and candle manufacturers. Coir is one of the best materials for cables, on account of its lightness, elasticity, and strengh. It is durable, and little affected by salt water. Of coir and coir-made rope, about 9,000,000 to 10,000,000 lb. are annually shipped from India; much is prepared in Ceylon; but Cochin is noted as the port of shipment for the best quality of yarns.

Certain varieties or cultivated forms of the coconut are better suited than others for the production of coir. Cochin (a small native state on the Malabar coast) produces a bright, light-coloured coir, which fetches the best price. On the other hand, a good deal depends on the age at which the nuts are gathered, and the time which elapses before they are husked and cleaned.

In the process of separating the fibre, the following commercial qualities are produced:—The mat, or long fibres, used for spinning purposes: the shorter, or more stubborn fibres (bristles), for brooms or brushes; the tow or curled fibre for stuffing cushions; and the dust or refuse for gardening purposes. When dyed black, the tow has been used as a substitute for horse-hair. A singular use was proposed a short time ago for coconut dust or refuse. Taken before it is quite dry, and subjected to great pressure, it is capable of forming plates of varying thickness, like millboard, only much more brittle. These boards, if used as backing for steel plates or ironclads, swell up on being punctured below the water-line, and soon close the orifice. If really effective, such plates could be produced at a trifling cost, for thousands of tons of coconut refuse float away annually down the rivers in India and elsewhere.

The first step in the preparation of coir is the removal of the husk from the hard interior shell. This is usually done by striking the nut on a pointed instrument stuck in the ground. A man can husk about 1,000 a day. The husks are then soaked in water. This is variously conducted. The water may be either salt, brackish, or fresh; in this the husks are kept for a lengthened period. The more recent method is to place them in tanks of water made warm with steam. The latter heatens the softening process, and improves the colour and quality of the fibre. Where machinery is used, the husks, when sufficiently soaked, are passed through a crushing mill, which flattens and crushes them ready for the extractor, or breaking-down machine In the latter the fibres are completely disintegrated, and are then passed through a "willowing" machine, to free them from dust and refuse. It is calculated that, when treated in this country, 10,000 husks will produce 45 to 50 cwt. of "spinning fibre," and 9 to 13 cwt. of "brush fibre."

In Ceylon, 40 coconuts are said to yield 6 lb. of coir; in Madras, 8 large coast nuts yield 1 lb. of coir; in the Laccadives it requires 10 small nuts to yield a pound of coir, measuring, when made into yarn, 35 fathoms. In 1889, an attempt was made to export coir from Lagos. A bale of loose coir, weighing 42 lb., was prepared from 400 nuts. No attempt had been made to separate the "bristle" and "mat" fibres. Good Ceylon bristle fibre was then worth £30 per ton, and Ceylon mat fibre £10. The Logos fibre, when separated, was valued at £15 and £9 to £10 respectively ("Kew Bulletin," 1889, pp. 122-132). The average annual value of coir goods exported from Ceylon is put down at £60,000. The quantity exported in 1884 was as follows:—Coir rope, 10,419 cwt.; coir yarn, 84,057 cwt.; coir fibre, 12,732 cwt.; total, 107,208 cwt.

The principal exports of coir from India are from the Madras Presidency. For the five years ending 1880-81 they were 271,934 cwt., valued at R2,179,767 while for the year 1881-82 the value was R2 354,202. The exports from the Malabar coast alone amounted to R2,243 000. "From these figures an idea may be obtained of the immense importance of Malabar and the Laccadives as the chief seats of the Indian coir industry."

The approximate market value per ton of coir goods in London on the 16th September, 1895, were as follows:—

Coir yarn: Cochin, common to good, roping, £11 10s. to £14, weaving, fair to good, £20 to £25; Ceylon, fair to good, ballots and bales, £17 to £21.

Coir fibre: Cochin, fair to good, £11 to £20; Ceylon, clean, £8 to £9 10s.

Coir rope: 4½ to 6 inch, 2½ to 3½ inch, and 1½ to 1¾ inch, £11 to £11.

Bristle fibre: Medium, £18 to £21; good, £29 to £30.—*Journal of the Society of Arts.*

SWAMP PLANTING.

EUCALYPTUS GLOBULUS AND OTHER EUCALYPTS.

Much has been written from time to time on the special antimalarial properties possessed by an Australian tree known as *Eucalyptus globulus* and such writings cause no inconsiderable number of enquiries at the Botanical Establishments of West Indian Colonies for plants of this species. It has been stated that the planting of this tree has lessened the amount of fever prevailing in the neighbourhood of the city of Rome and in other places, and it is therefore regarded as a suitable plant for any swampy district, and in this way, it has become a somewhat popular idea that *Eucalyptus globulus* should be planted in all malarial districts. I am conversant with what has been written on the subject by Baron Von Mueller and various other Botanists—but without controverting one word of what they have said, I must point out that in our case the circumstances and climate are so different, that I am sure that even Von Mueller himself would at once tell an applicant for information that it would be useless to plant under such conditions of climate as prevail in the lowlands of the West Indian Islands. During my twelve years in Jamaica I planted on plain and hill, and distributed year after year many hundreds of plants to others. Those on the hills succeeded, those on the plains invariably failed, and to plant in a swamp or near swampy ground was found to kill them at once. The trees in the hills grew rapidly and Von Mueller, quoting from the records of the Department, states that trees had grown 60 feet high in seven years, and having been personally in charge of them for a period of six years I can fully confirm the statement. *Eucalyptus globulus* is a native of the Southern parts of Australia, where at times tho temperature falls below freezing point, as in Victoria and Tasmania, so that it is not, in reality, a native of tropical regions, but requires, as do most plants coming from temperate climes, a season of rest or winter to enable it to thrive, and this our climate of the plains is enable to afford. The fact is, *Eucalyptus globulus* will not grow in the West Indian plains, and if planted it will not survive for moro than a few months, and the reputation it has somehow or other obtained for being suitable for tropical growth is certainly *nothing more than a popular fallacy*. If we examine the reason given for its reputed anti-malarial properties, we shall find it stated. (Von Muller, p. 151), "Eucalyptus leaves generate *ozone* largely for the purification of the air; and tho volatile oil is very *antiseptic*." Not only is this true of *Eucalyptus globulus* but of many other plants of the *genus*, and also of somo of our own West Indian plants, and where therefore *Eucalyptus globulus* is proved to fail, wo should seek out other trees of a suitable character. If, however, *Eucalyptus globulus* will not grow with us, there are others of tho *genus* that will thrive, among which we havo *E. tereticornis*, *E. citriodora* and others. Of the first, we have a tree in the Trinidad Gardens giving four feet in diameter of the stem at three feet above ground, and reproducing itself freely from seed, which of itself is a fair test of its acclimatization, but although *Eucalyptus globulus* has been continuously planted for years, not a single tree has thriven. Besides being ozone givers the Eucalptii are rank feeders and absorbents of moisture, and it is highly probable that the tree acts in this way as a malarial antidote, far more than in giving off or dispersing an almost magic influence from its leaves, and that many West Indian or exotic trees of similar character would answer as well and serve the same purpose. We may mention as suitable the Swamp Palm *Raphia taedigera*, the Ivory Nut Palm *Phytelephas macrocarpa*, the *Casuarinas*, the Saman Guango or Rain Tree, *Pithecolobium, Saman* and the *Pterocarpus* of our own swamps. Phytelephas gives the ivory nut or "corossos" of commerce. Casuarinas in India have cost £1 to £10 per acre to raise, returning in eight years £13 to £32, (Von Mueller); and they aro suitable for saline soils, and "thrive much better than *Eucalyptus globulus* in Lower Egypt," (Dr. Sweinfurth). The wood is admirable for fuel, and the tree has been proved to do well and grow rapidly on the Trinidad Lowlands. The Saman is well known for its beautiful wood and fast growing properties and the Pterocarpus give the Dragon's blood of commerce: but even such trees as these if planted directly into a swamp, will probably fail for many reason; but if planted on small hillocks in or near such places, they will thrive and do well' and ultimately take possession of it. Some may dispute the fact that *Eucalyptus globulus* will not grow in the districts indicated, and reference may be made to plants existing.

In such case I would recommend the cultivator to make sure of the species he has growing; for it may be safely assumed that it is not the plant supposed, but a *species* of the *genus* more suited to our climate. The *species* of Eucalptii most suitable for cultivation here are those coming from the hottest and most tropical portions of Australia, such as the districts in the vicinity of Port Darwin or the most northern portion of the territory, and not those coming from the southern or more temperate regions.

12 June, 1981 J. H. H

VARIOUS PLANTING NOTES.

THE DANGER OF WEED KILLERS.—We would draw the attention of all who handle weed-killers to the exceedingly poisonous elements sometimes included in such preparations. Messrs. Spiers & Pond were recently fined £5 and £5 5s. costs for selling what was alleged to be a preparation of arsenic, without entering the signature and address of the purchaser. The preparation was sold as a weed-killer, and it said to have contained 75 per cent. of arsenic, and 25 per cent. of caustic soda, in all 2 lb. 13 oz. or sufficient to kill 6000 persons. Apart from the danger which might result to those buying such mixtures without due knowledge of their contents, there is no small risk involved if such violent poisons are left lying about in positions easily accessible to children and others ignorant of their nature or contents.—*Gardeners' Chronicle.*

"JOURNAL OF THE KEW GUILD."—We have already alluded to the recent publication of the number of May, 1895, and may now give some indication for its contents. It opens with a portrait and brief memoir of Sir William Hooker, the first Director. What he did, how great was his courtesy, and how potent his aid to young gardeners and students, is held in grateful remembrance by the older generation, and it is well that tho new-comers should be made acquainted with the facts also. The main purpose of the guild, that of linking the Kew gardeners of the past with those of the present, seems to have been well accomplished, and no doubt the circulation of the present number will still further promote that co-operation and good fellowship which are so desirable. The items of Kew news have mostly been published already in the gardening papers, but it is very useful to have them collected in so convenient a form. The notes from far off members in all quarters of the globe are most interesting, and constitute a feature which we would fain hope may be much extended. Some notices of old Kewites who have passed away will be of interest to many who still hold their memory dear. There are some omissions which will probably be made good in subsequent issues. The list of old Kew men will prove very serviceable. We congratulate the promoters on the progress of the guild, and most heartily wish it all attainable success.—Ibid.

THE HILL-COUNTRY OF CEYLON: THE BEST OF CLIMATES AND SCENIC ATTRACTIONS.

To see ourselves as others see us may occasionally shock our vanity, but it not infrequently produces precisely the reverse effect, and acts as a powerful antidote to the normal tendency of human beings to undervalue what is familiar to them. We are all aware of the floral and scenic beauty of our island. Every passing stranger sings its praises in our ears, and yet so immersed are we in the race for wealth that we scarcely have time to look about us and realise the marvellous gifts of climate as well as scenery with which nature has endowed this favoured isle. A pamphlet in manuscript lies before us by one who, as a recognised Meteorologist of high repute both in Europe and Asia, and a resident in many climes, is qualified to judge and speak with authority upon the merits of our hill Sanitaria. The author, Mr. Douglas Archibald, a former member of the Bengal Educational Service, has good reason to dread the deadly Bengal climate, which after four years. sent him home in 1878, seriously invalided and no one than he can better judge of the superiority of even our sea-level climate over those of the Indian main land; and though he has recently returned to the scene of his former labours and been engaged in important meteorological work for the Government of India—amongst which a Monograph on the Climate of Calcutta is conspicuous,—he has wisely resided in the Himalayan Sanitaria, and is thus able to compare them from personal knowledge with our own Highlands.

Amongst the points which seem to have struck Mr. Archibald's imagination most forcibly are the accessibility of our hill resorts as compared with those of India. The journey to Simla for example, involves eight hours' weary jolting in an antiquated tonga, which occasionally, as he has told us happened to himself, breaks down and deposits its human freight in the road. This after 48 hours' railway journey in a May sun is enough to finish off the traveller altogether. To compare this with the delightful journey to Kandy, Hatton, and Nuwara Eliya, or Bandarawela seated in the refreshment car, eating iced bananas, quaffing cool liquors, and gazing at our gorgeous scenery is like comparing barbarism with civilization! Another point is the relative cost of reaching our Sanataria from say Calcutta. The journey to Simla from either Calcutta or Bombay including tonga is at least R120 or R130, and return about R160 or R170.

This spread over three days is R50 a day, whereas from Calcutta to Colombo, it is R180, return fare by P. & O. steamers spread over 10 days, or at the rate of R18 a day *including* feeding. In the other case the feeding by the way is all extra Moreover, the sea-journey itself is incomparably pleasanter and alone one of the best of health tonics.

A further advantage upon which the author lays great stress is the vast superiority of our hotels right through to Bandarawela over the corresponding houses which adopt the title in India. We are not in the habit of considering ours altogether perfect but it is consoling to find that they are far ahead of most of those on the mainland, and though our prices may seem somewhat high, we at all events appear to get our moneys' worth.

The Eulogium pronounced by Mr. Archibald on Nuwara Eliya is to a great extent deserved especially in regard to the beauty of its scenery, the facilities it affords for recreation of all sorts, and the absolute purity of its atmosphere and in these respects it deserves, as the author points out, to be better known and advertised. We are, so blessed with beautiful uplands that we are apt to underrate their supreme merits and forget that the enormous territory of Northern India has only one line of refuges from the heat at all of which the monsoon rainfall is far more disagreeable than at Nuwara Eliya. It must always be remembered that the rainy season in the districts of which Hatton is the centre is always declared by the resident planters to be about the healthiest, due to the equableness of the temperature, so that visitors should put this to the credit side even in the few months when the weather may seem to be against them. The "perfection of climate as we have frequently pointed out, is in the uplands of Uva, and the author fully recognises the remarkable feature of the climate of this district represented by Bandarawela in affording a complete shelter from the rains of the S.-W. monsoon while at the same time it has a mean temperature of only 3 degrees above the ideal of perfection viz. 65°. This means of escaping from the South-west monsoon rains is as Mr. Archibald points out a unique feature of Ceylon due to its insular position and is with a few exceptions such as Kashmir, unattainable in India, and he draws attention to the peculiar advantages possessed by Bandarawela as a resort during June, July and August—or, indeed, from June till October.

TIN-PLATE TEA CHESTS.

Mr. Frank Randell, of Llanelly, has written to the *Ironmonger* on the above subject, which is at present being largely discussed in Swansea tin-plate circles. He says:—"I will at once say that having had over twenty years' experience in the tea trade, the new style is, in my opinion, a very distinct improvement upon wood chests lined with lead, and I am convinced that it is the tea-chest of the future, now that I have seen the actual thing and the several advantages in its favour. I notice that there is a marked gain with regard to the weight of the chests or tare—viz., 10 lb. in every 100-lb. chest—and, therefore, in a cargo of, say, 10,000 chests, there is a saving of freightage of 100,000 lb., and a further gain of 1 to 2 inches cubic space per chest—two most importent items in cost of transit. The tin-plate chest being hermetically sealed is a positive safeguard against any damage by water, either by sea or rail, and it is, moreover, proof against the possibilities of contamination by microbes or other germs of disease, to say nothing of a vast amount of tea being secured from running out through the cracked timber and other crevices often found in the wood chests, it being a well-known fact that several thousand pounds of tea are lost annually in this way during transit and handling from one warehouse to another. The use of tin chests further prevents the damp air getting into the tea, thus retaining its aroma and full flavour until wanted for use."

In view of an alleged scarcity of timber he holds that in cost the tin-plate chest will compare favourably with the wooden article. Commenting on the latter the *Ironmonger* says:—"It will be interesting to note whether the tin-plate manufacturers try to make a proper use of the opportunity. They seem to have a great chance of creating an enormous demand, and as China has lost her supremacy in tea, they have a magnificent chance of gaining converts in Ceylon, Assam, Japan, and other tea-growing countries. The Chinese may possibly adhere to the old chests, but elsewhere the tea-growers are progressive men, and if it can be shown that the tin-plate chests can be had at nearly the same prices at the wooden ones, they will almost certainly be adopted. Who amongst the tin-plate makers will take the matter up in an intelligent, level-headed, enterprising manner?"

INDIAN AND CEYLON TEA IN AMERICA.

Mr. Mackenzie, the special commissioner for Ceylon, who is now in London, has sent us the following particulars referring to the campaign for pushing Indian and Ceylon tea in America :—" It is difficult to say anything about what is being done to push Ceylon and Indian tea in America without trenching on other people's business. And about that I have so often been asked to be discreet, that I think it well to say nothing. " But, vaguely and generally, I may say that I found much more interest is now taken in British-grown teas than was the case early this year. The vigorous efforts a few strong London firms have made to push their packet teas appear to have convinced American dealers that 'contemptuous indifference' is not the best attitude to assume towards the teas (Ceylon and Indian) chiefly contained in those packets

" The advertising schemes which Mr. Blechynden and I propose to carry out were somewhat delayed by the uncertainty as to the amount of support we might expect from Calcutta. But beginning from December (next month), short pithy advertisements are to appear in twenty-seven periodicals of the weekly and monthly order, which concern themselves chiefly with ladies and household matters.

" Besides these, we advertise in the principal trade journals and in several New York and Brooklyn Saturday evening papers. We have also been assisting at food shows and in many other ways. Half-hearted measures are of no use, and are merely a grievous waste of time and money. We should strike strongly and at once. But unfortunately our Indian allies are, in my opinion, too niggardly with their funds. Then are rich enough and strong enough to furnish *twice* and much as Ceylon does. Yet it is with difficulty that *half* as much can be extracted from them.

" Several good firms have begun to handle our teas, chiefly because they have heard we are to assist largely in pushing them. It would be a pity were they to be disheartened because of failure on our part to do what they expect of us. Our opportunity is to be in *1896*, and all our strength should be put forth during that year."—*H. & C. Mail.*

PRESERVATION OF BOOKS IN THE TROPICS.

In the *Kew Bulletin*, 1894, pp. 217,218, an extract was given from *Indian Museum Notes*, Vol. iii. No. 3, on the best means for preserving books from the ravages of insects in the tropics. On this subject the following letter has been received from Surgeon-General George Bidie, C.I.E., formerly in charge of the Government Central Museum, Madras :—

Berry View, Paignton, South Devon, 19th March 1895.

Sir,—In the *Kew Bulletin* for 1894, p. 217, there is a memorandum on the " Preservation of Books in the Tropics," and I now write to mention that so far as their protection from insect enemies is concerned, the subject was investigated by me years ago, when in charge of the Government Central Museum, Madras, and the practical outcome of the experiments recorded in the Museum Annual Reports for 1881 (p. 6) and for 1883 (p. 4). Indeed, it may be affirmed that the application of corrosive sublimate for the protection of books from tropical insects was first devised by the staff of the Madras Museum, and thereafter regularly used for the books in the scientific and large public libraries which it contains. Before bringing it into use it was carefully tested by placing books and papers poisoned with it in the nests of white ants, the most formidable of all the enemies of literature, and it was invariably found that the articles thus exposed came out of the ordeal uninjured. The composition of the Madras preservative was as follows :—

Corrosive sublimate	.. ..	1 oz.
Carbolic acid (Calvert's) (or Thymol, ¼ oz.)	..	1 oz.
Methylated spirits	.. ..	2 pints.

This mixture was carefully and freely applied with a soft brush about the bindings and amongst the leaves of the books, the eyes of the operator being protected with close fitting goggles. It dried quickly and was perfectly safe, as I have never seen or experienced any disagreeable effects from handling books poisoned with it.

My impression is that the value of this preservative was made known to all public departments by Government circulars, but apparently these never penetrated so far as Calcutta.—I am, &c.,

(Signed). G. BIDIE.

W. T. Thiselton Dyer, Esq., C.M.G., &c.,
Director, Royal Gardens, Kew.

COLOMBIAN INDIA-RUBBER.

Through H. M. representative at Bogota (Mr. G. Jenner), Mr. Robert Thompson (who was for many years at the head of the Government Gardens and Plantations in Jamaica), has sent home a report on the agricultural productions of the department of Tolima (Colombia). The following is a reference of interest to our readers :—" A very important species of Rubber is indigenous, and, I am inclined to think, peculiar to Tolima. Unlike other important kinds of Rubber, it grows at high elevation, viz., at from 6,000 to 8,800 feet above the sea-level. Some thousands of bales of it were exported a dozen years ago. But as the tree was only locally distributed, the source of supply was soon exhausted. The authorities at Kew have named this plant *Sapium biglandulosum*, a species which is also said to be found in British Guiana, where, however, it seems to be of no value as a Rubber-producer.

" In connection with the cinchona plantations above referred to, a plantation of this Rubber was made about 10 years ago. The trees grew with remarkable rapidity with trunks a foot in diameter in six years; but this plantation shared the same fate as the cinchona, that is, it was abandoned years ago because the cinchona was abandoned. With renewed attention, however, this plantation may still be made important. " A few years ago I directed the attention of the Secretary of State for India to the advisability of cultivating this plant on a large scale in that country. My letter was referred to the Government of India. I think, however, that no progress has been made. This valuable plant, could be cultivated over a wide range of latitude in India, thus extending from the elevated mountainous regions of Southern India to the low-lying valleys of the Himalaya as far as 26° north latitude And this is a great advantage as compared with the limited zone in which the other important tropical American species of Rubber introduced to India can be cultivated."—*India Rubber Journal.*

THE SEASON IN MADRAS.

Yesterday the Board of Revenue telegraphed to the Government of India for the week ending the 23rd Nov. as follows :—" Heavy rainfall along the East Coast and South of Nellore and moderate falls in the remainder of the southern half of the Presidency ; showers elsewhere. Agricultural operations are progressing Standing crops are generally good. Harvest is going on with a fair outturn. Pasture and fodder are sufficient Cattle is in good condition. Prices are falling especially in the Deccan, Southern and West Coast Districts.'—*M. Mail.*

VEYANGODA DESICCATING COCONUT MILLS

were never so busy as at present, working night and day and disposing of nearly 50,000 nuts a day, or the equivalent of the produce of over 10,000 acres per annum. The mills are most popular with the estate proprietors and villagers on account of the fair prices they give for the crops of nuts. Nearly 200 natives too, find profitable employment in these mills, an immense boon to the surrounding district. Native capitalists are trying their hands at mills on the Kelani and at Negombo.

COPRA IN FIJI.

Attention is drawn in our advertising columns to an ordinance passed in Wallis Island for the purpose of improving the quality of the copra made on the island of Wallis and Futuna. The natives are forbidden to climb the trees except to obtain nuts for drinking or domestic use, and only nuts naturally fallen from the trees are to be used for copra making. Traders are liable to fines for buying bad copra, so that it is evident that the Government intends to improve the standard of thier exports.

The native tax copra has been coming in very fast during the last month or two and has every prospect of continuing. It is expected that the yield will be quite equal to that of last year, so that there will be no diminution in the revenue of native taxes as was anticipated shortly after the hurricane of January last. A most unwelcome feature has however cropped up in connection with the product this season. Several cargoes brought to Suva have been rejected and sent back to the districts, owing to the copra being damaged by salt water. This has been caused principally by leaky vessels and faulty tarpaulins, while in one case at least the produce was spoiled by the ballast being taken out and the vessel completely filled with copra which was thereby damaged with the bilge water. The damage has occurred, not only on native boats, but also on European-owned vessels. Fully fifty tons have been rejected on this account, and a certain portion of this will be complete loss.—*Fiji Times*.

A DAY ON A LIBERIAN COFFEE ESTATE IN THE MALAY PENINSULA.

"SUDA PUKOL LIMA, TUAN" (5 o'clock, sir!). With these words am I awakened one morning by my Chinese boy. Though intensely sleepy, I have no further chance of rest, as my "boss," no gong being handy, begins to drum violently with a boot on the wooden partition of his room. So I slip out of bed and, after washing my face and hands, get hastily into my clothes, a costume consisting of a cotton vest, khaki trousers and button-up coat, merino socks and canvas boots. By this time it is half-past five, and the first streaks of dawn have been appearing for the last few minutes in the East, the mist is lifting, and the birds are already giving notice that a new day has begun. I shiver as I turn from the window, and am truly glad when my boy reappears to announce, "Te suda siap, tuan" (tea is ready sir).

I am soon at work on hot tea and the inevitable pouched egg in the dining-room, into which both bedrooms of the bungalow open. These three principal rooms form the main portion of the building, and stand on piles raised four feet from the ground. From the back of each bed-room, steps lead to the bath-room below; here also are two smaller rooms used respectively for stores and medicines, and the bungalow opens on to a verandah in front.

By the time my meal is finished it is quite light, so, putting out the lamp and whistling to the dogs, the manager and I start out. After some five minutes' walk we came to the coolie lines. Here are drawn up two long rows of coolies, Tamils from various districts of Madras, the men separate from the women and children. The manager then produces his small muster-book, and calls out from it the names of the coolies; opposite the names of those who are present he puts a dot, against those of the absent a cross. Muster being finished, he proceeds to tell off his coolies to their various works, so many to holing, so many to filling, so many to weeding, so many to pruning, two or three men to the nursery, and, lastly, some men to plant. The manager then goes back to the bungalow, saying he has some work to do, and that he will give out medicine to any coolies who are sick, and thus save me the trouble of returning to the bungalow for what is, as a rule, part of my duty.

I start off to the weeders. Weeds in this tropical climate ripen and seed wonderfully quickly, so quickly that we find it necessary to weed every portion of the estate every three weeks. One weed in particular, called *vaalkie* by the Tamils, a kind of chick-weed, is the bane of every plantation; it roots very deeply, and if any portion of the root or head be left on the ground, it will revive as though it had never been touched. For this reason, all weeds are collected in sacks, and, after work is over, either burnt or buried. Each weeder is supplied with one small sack, and with a small pointed stick to loosen the soil at the weeds' roots. I give each coolie so many rows to weed, and am careful to notice whether the number of workers arrived at the spot corresponds with the number despatched from muster.

My way now lies through jungle, to the new clearing, and as I take the path all is shade, though in the open the sun has already begun to give its fierce heat. My dogs thoroughly enjoy themselves ranging on either side of the track in search of game. Squirrels of several kinds run up the trees for refuge, shaking off great drops of dew which fall on my pith hat with a thud. Trees rise up on all sides, ranging from the slender sapling to great giants of a hundred and fifty feet high, interlaced in many places with beautiful vines. The undergrowth is dense: nowhere can one see further than five yards, one close mass of creepers, palms and wild ginger leaves. Here, in the shadow of the trees, is none of that gorgeous colouring, or life, so much written about as existing in the forests of Brazil. It is true that from the open clearing, at certain times of the year, one does see the leafy tops of trees here and there glorified by tints that would shame an English autumn, but in the shade where I walk, the general impression is of a great green mass, relieved from monotony by one of the graceful rattan tribe. Save for the occasional scolding of a squirrel, or the chattering and shrieking of various sorts of monkeys, disturbed by the approach of man, the silence is wonderful. The birds seem to be ashamed of themselves. One rarely sees them; but on this path, wherever a gleam of sunshine manages to force its way, colour is supplied by hundreds of butterflies, some of striking brilliancy and beauty.

Suddenly my reverie is rudely disturbed by a great yelping of the dogs, who, seeming to scent something, keep rustling to and fro in the undergrowth, as they now find, now lose, the scent. It may be a wild pig! And I am cursing my ill luck in not having a gun with me, when a small form, no doubt the innocent cause of all the commotion, creeps suddenly out of the jungle some twenty yards away, looks round with frightened eyes, and then hops slowly across the bath, back into the jungle. This is a mouse-deer, the smallest of all deer, perfectly proportioned though but a foot high. The dogs soon give up the chase, and come back to my side just as I emerge into the new clearing. Here is what would seem to the uninitiated a scene of wildest confusion, trees lying about in all directions, some heaped on top of others, and all more or less charred by the fire that was applied to them a month ago. Now, in reality, everything is quite in order: if one looks closely, one can see pegs placed in line at a space of ten feet apart, this being the distance at which holes for the coffee plants are to be cut. Wherever a bough would have been in the way, it has been lopped off. The explanation of the seeming disorder is that, in this country, timber is never removed from a felled clearing. By its shade, it keeps the earth from drying too fast, and, decaying so rapidly as it does, it forms a valuable top-dressing for the soil.

My first business in the new clearing is to inspect the work done by the holers. Each of these is armed with a heavy hoe and a sort of iron scoop into which is fitted a long handle. The hoe is used instead of spade for digging, the other implement to trim the sides of the hole, and remove earth where the hoe cannot reach. I have first to set the coolies their task, then to see that they are doing their work properly, that the earth which they remove is neatly piled in one or two heaps We do not allow more, as the "filling coolie," whose duty it will be to refill these holes with top soil, would have to hard a task had he first to remove the earth left all round the hole by a careless "holing coolie."

A quarter of an hour or so I spend with the holers, then after checking their numbers I pass on to the fillers, whose task I set, and whose work I proceed to inspect. They must refill the holes with soil scraped from the top of the ground, which soil has to be carefully freed from roots before being put in. It is then stamped down, and more is added until the soil of the hole is raised three or four inches above the surrounding level, thus allowing any subsequent subsidence caused by rain.

The planters next claim my attention. They have just started work on the field, the small plants being brought form the nursery, which is handy, and given to a certain chosen few who understand the work. They, making a hole with a wooden peg in the earth of the hole itself place in this the tap-root of the plant, taking great care not to bend it, and completing the operation by pressing down the soil round the root with their fingers. After each of these planter coolies there comes another coolie, whose duty it is to shade the young plants with palm-leaves, which he places east and west of them, thus shielding them from the sun, but allowing a current of air to pass through from north to south. I watch the planters for some time. Coolies are very apt to bend the tap-roots; for this reason we never take the planting coolie, so he can never give the excuse of having been in a hurry. I glance at a young nursery, where two or threo men are employed in watering the seed put in a few days before; then, on looking at my watch, find it is time to be off. So I turn homewards, only halting on my way for a few minutes' inspection of the prnner's work in an old clearing, and arrivo at the bungalow again about eleven, veiy hungry and thirsty.

My boss, who is lying in a long chair, is apparently in the same plight, as he calls out to me to hurry up and change. This accordingly I prepare to do. But first I must have my bath. The bathe, one cannot call it bath, is a much more frequent and important occurrence in the East than in the old country, so it seems worthy of description. In one corner of the bath-room, which I enter by means of steps from my room above, stands a big earthenware jar full of water. This jar is, in my case, about three feet high, and rather more than a foot in diameter at the mouth broader below. Near it is placed a tin bailer, and with the help of this one is expected to throw water from the jar over oneself until refreshed. This, in such a hot climate, is a somewhat lengthy operation, but, oh! the relief of it. The pleasant feeling of that cool steam trickling from one's buzzing head, down one's hot spine! It is much more refreshing than the ordinary bath, but I well remember that when I first came out to this country I was much preplexed by this mysterious jar. I stepped boldly into it. But, alas! when my legs were in, there was no room to get at the water.

Eventually I was forced to appeal to my boss for advice. He roared with laughter at the idea of my getting into the jar, but after putting me right, he was obliged to admit that he himself had done the very samo thing, when he first came out!

Dressing after my bath was not a work of much time, as in a bachelor establishment one does not trouble onesself with too many clothes. A vest, the sort of skirt called a "sarong" that is worn hy all Malays, and a pair of grass slippers complete my toilet. We shout to the boys for food, which soon arrives, and consists of four courses—fish, mince, stewed chicken (chickens appear constantly under various disguises), and curry. I do not touch the last dish, as I find it makes me so sleepy that turning out again into tho heat is distinctly objectionable. Our drink is whisky, beer being too bilious for ordinary occasions, though we sometimes do indulge in it by way of a treat on Sundays. When our food is over we enjoy a little interval of idleness, lying in our long chairs on the verandah and smoking. But at half-past one tho work of the day begins again; we resumo our outdoor clothes; the manager goes off to see after the pruners, remarking that he has not much confidence in my skill in that line, and wants to see for himself what they are doing; while I start on my morning's round over again.

The coolies had been tasked, so that, if fairly industrious, they should be able to finish work between the hours of one and half-past two, at which time a horn is blown as a signal for all untasked, such as nurserymen to leave the field, while those of the tasked who have not then done their alloted portions have to remain to complete it.

As I have started out at half-past one, I expect to find that most of the coolies have finished, and on my way to the weeders, I do meet several from each of the works, who have evidently done what they had to do, and are hurrying back to the lines to wash themselves. When I reach the weeding party, ten men have finished and gone, and the others remaining have only a few yards to complete. Their work seems clean, so I go on to the new clearing. No holers! I ask the headman who has been looking after them where they are, whereupon he answers that they have all finished, except one who has gone sick.

It never does to trust any of these men too implicitly, so I proceed to count every fifth row, and find that though the correct number of holes has been cut, many are not of the proper size. As the headman possesses a gauge with which to measure the holes, he has no excuse to offer, especially as he has been warned only yesterday. So I dock two days' pay, firmness being the only method that answers with coolies, leniency they regard as weakness to be taken as much advantage of as possible. The fillers' work is satisfactory. And now all the coolies have finished, as the nurserymen and planters went off some ten minutes ago, at the blowing of the horn.

I have nothing more to do, and telling the headman to have the coolies ready for muster at four, I go back to the house. When 4 o'clock arrives, off I set to the lines, and put down the working coolies' names in the small muster-book. Then I have to check the different totals given me by the headman, and see that they, when totted up, agree with the grand total in the muster-book. This takes some time today, as the man who looked after the holer gives me one too many in his total, entirely forgetting to deduct the coolie "gone sick." After puzzling a bit, I find out his mistake, and am able at last to get back for a much-needed bath and change, while the coolies begin to cook the rice for their evening meal.

After tea there is some book-work to be done: I must enter the coolie's names from the small muster book into a big one; then the manager calls to me to take copies in the letterpress book of somo business letters which he is writing. So I am well employed until dinner-time, half-past seven. Dinner does not differ materially from tiffin, except that soup always begins it, and curry is dispensed with. As our rising hour is an early one, we turn in about half-past eight, after smoking one pipe.

My day's experience may be taken as a pretty accurate example of work on most estates. If picking had been going on, of course we would have had also to measure the crop picked during that day, in the afternoon. To a man who becomes interested in the coffee, its growth, and cultivation, such work as I have described is not irksome; the morning's walk is always a pleasure; and though I must say that occasionally going out after tiffin into a burning sun is distinctly against the grain, still that is often the result of over-eating.

As to the amount of capital required to open a coffee estate in the Peninsula, £20 per acre is generally considered sufficient to bring the coffee into bearing. This should include all cost of buildings, &c.; of course, as one can easily see, the expenditure on a place of 100 acres will be greater in proportion than that on a place of two hundred, since a good manager would have to be paid quite as large a salary on the one as on the other, the store and bungalow would cost nearly the same, and so on with a good many items. For this reason it is bettor that no estate should be started with less capital than £4,000: this should allow for the opening of 200 acres.

I do not mean, by my account of a day's life on a coffee estate, to make out that the planter's lot is all work and no play. On the contrary, on Saturday and sometimes another day as well, we drive

into the nearest town and play either cricket or football. I see my reader shudder at the idea of football in 85 deg., in the shade—about the temperature at 5 p.m., when we begin to play—but I can assure him that not only is there no particular fatigue (except after the first try or two, when one is in no sort of training), but also I, for one, am certain that the exertion is of distinct benefit to the health of the many who, in towns, lead a life of two much liquor and too little exercise.

After football and a change, one repairs to the club, where there are to be met all the *élite* of the place, and where one can get a game of billiards. After a pleasant hour there, the cart is called, and in brilliant moonlight we drive home to our estate in time for the welcome dinner at half-past eight.

ABEL.

—*Field.*

TRADE AND INDUSTRY OF DUTCH GUIANA.

Unlike British Guiana, Surinam has been at a standstill as far as her population is concerned. According to a statement in the Demarara "Argosy," the number of inhabitants in 1805 was 64,602; in 1811 59,453; in 1831 61,511; and in 1893 only 58,866, notwithstanding that several thousand coolies have been imported in late years. Yet the capital shows a considerable increase, but this is hardly a favourable sign as it means so many the less employed in agriculture. In 1847 Paramaribo contained only 13,266 inhabitants; today the town's-people number nearly 30,000.

The exports of produce from Surinam show the same vicissitudes as in Demerara. Coffee was at one time the main crop, and in 1817, eight and a half million Dutch pounds were exported. It never went entirely out of cultivation as in British Guiana, but in 1890 the amount had sunk to 437 lb. However, it is creeping up again, and in 1893, 30,514 lb. were exported. Cotton has gone out of cultivation entirely. In 1823, two and a half million pounds were produced, but in 1885 that amount had dwindled to 3,533 lb., and now it is *nil*. Sugar was of less consequence when cotton and coffee were to the fore, but when they fell, it assumed a greater importance. In 1816 the amount was eleven and a half million pounds, after which it increased, until in 1835 it reached thirty-seven and three-quarter millions, but in 1893 only fourteen and a half millions (say, 7,250 tons) were produced. This seems absurdly small, and, as may be supposed, the sugar industry might be eliminated without ruining the colony.

What then are the principal products of the colony? First of all comes cocoa. In 1817 it was exported to the amount of 113,454 lb—in 1893 it reached to *nearly seven millions*. Several districts are entirely wanting in sugar estates, *e.g.*, the Upper Cottica, which produced in 1893, 23,419 kilos. cocoa, 4,545 coffee, 10.275 corn, 7 450 ground provisions, and 17,368 bunches of plantains. Balata is an article of some importance, the exports in 1892 reaching 241,359 lb; and in 1893, although much smaller, the total was yet 65,092 lb. With regard to the Surinum gold industry, there are four gold-bearing districts, viz.: Upper Surinam, Upper Saramacca, Upper Marowyne and Lawa district. The output of the last ten years has not increased to any great extent, and it is almost impossible to say what has actually been collected, as the royalty (or export duty) is only paid when the gold is sent away. The consequence is that although in 1893 there appears to have been about the value in round numbers 1,200,000 guilders collected, the export amounted to nearly 1,600,000. This last sum is higher than the total of any former year, but, as may be seen, it only amounts to 640,000 dollars, as against about two millions and a half dollars in British Guiana. During the previous ten years the annual collections amounted to an average of about a million guilders per annum, and this seems to be fairly stationary Of the districts the Upper Surinam produces more than half; then came the Lawa and the Saramacca, about equal, and finally the Marowyne. The number of persons engaged in the industry is put down as 3,382, this total including every one interested, whether at the diggings or in the town. The village system appears never to have been introduced into Surinam. The abolition of slavery in 1863, when 37,000 people were emancipated, made a great impression, but was not so ruinous as the same change in the British Colonies. The output of sugar, coffee and cotton fell at once to half, and these products have not yet recovered, nor are they likely to do so. Possibly coffee may be replanted, but it is in cocoa that the hopes of the colony lie. This did not participate in the downfall of the other products, but advanced with rapid strides, rising to double in the 10 years from 1860 to 1870.

AN ENGLISH COLONIAL EXPERIENCE.

THE CULTURE OF TEA IN CEYLON.

By Our Special Correspondent in the Far East.

(Translated from the *Journal Des Débats.*)

On board the "Salazie," Oct. 7th, 1895.

I profit by the clemency of the sea in the Strait of Malacca to send you some notes that I have been able to gather on my passage to Colombo on the culture of tea in Ceylon. The chance—I ought to say the good fortune—of life on shipboard has already put me *en rapport* since leaving Marseilles, with Mr. C——, a planter of importance in the North of India. I will recount to you anon his experiences. They are not without interest to our colonists present and future. They appear to me to be the same which has been followed for fifteen years in "the Great sland of the Indian Ocean" (Ceylon) of which the area, it should not be forgotten almost equals that of Ireland.

I will spare you my sensations of Colombo. All has been said elsewhere of the stupour of delight with which we were filled at the first revelation of tropical nature. One feels himself overwhelmed by the splendid luxuriance of plants and flowers. And yet I had only had a few hours of it when a grey sky burst in a waterspout of warm rain. I should not have regretted it much elsewhere. This drawback was sufficiently prolonged to help to accentuate the *bizarre* sensation of the extraordinary power of vegetation of this privileged island.

I had been recommended to go and see the Editor of the *Ceylon Observer*, Mr. Ferguson, who has resided in the island for 30 years and whose name is an authority in matters of tropical agriculture. He put himself with perfect willingness at my disposal. It is thanks to him, to the documents he was good enough to furnish me with, and notably to his book "Ceylon in 1893," that I am enabled, aided also by the recollection of my conversation with Mr. C——, to send you these remarks, a little unconnected it may be, on one of the most curious economic developments of these latter years.

Two groups of figures suffice to describe it. In 1873 Ceylon exported 23 lb. of tea to England. This year it has exported 92,000,000 lb. and the planters count on *two hundred millions of pounds* in 1897. The first exportation having seriously begun in 1884 (two million pounds) one can say that it has almost increased a hundred-fold in 10 years.

As to how long tea will last in Ceylon opinions are very different. My Indian planter who, I beg pardon of him from afar, is not perhaps altogether impartial, holds, that the soil of the island is in course of being impoverished, by the series of diverse and intense experiments to which it has been subjected during a period of thirty years. Old Ceylonese (I speak of European colonists) are on the contrary very confident. They say that they form an experimental corps which certain blights have rendered prudent. Their plantations are situated in a climate healthy and very supportable for the European. They, have prepared numerous and rapid means of communication and no one is situated more than a day's journey from Colombo which is a port admirably served by international navigation,

The planters have in the Tamils from the South Coast of India, who immigrate to the island by thousands, an excellent supply of labour. Their number is estimated at 150.000 on the tea plantations alone. The Planters of tea in Ceylon believe that their product, stronger but very much more pure and less adulterated than China tea, is beginning to be more and more appreciated not only in England, but in all the English Colonies. Regarded from this point of view the proximity to the Australian market will be without doubt more and more profitable to them.

They avoid devoting themselves exclusively to tea and reserve a certain place for coffee, cacao, cinchona —&c. This tends to reduce the risks a little.

I hasten to return to the history of Mr. C. He is a fine example of what can be accomplished on the initiative of individual energy and it is because of that reason that I present myself to cite it.

Thirteen or fourteen years ago he joined with some friends and they subscribed a capital of about £30,000 (750,000 fr). They bought from the Government of India some thousands of acres in a district situated on the North frontier near to one of the Independent States—between the Peninsula and Thibet.

This district which is about 600 square miles, was thirteen years ago, an immense forest without a single tenant, habited by the elephant, the tiger &c., and where 300 or 400 savages vegetated. They have cleared it at their own expense. They have now a tea plantation of about 2,000 acres where they employ more than 2,000 workers, men, women and children, under the direction of four Europeans. I will not state the figure of interest which the undertaking brings to them. But one will have an idea if one reflects that generally, in "the case of a good yield," they count on a net profit of from £10 to £15 per acre, that is to say at least about 600 to 1,000 fr. per hectare. This district has actually a population of about half a million souls. This population has come liberally from the one and peopled districts of Bengal. The planters have always paid the passage of the workers that they engage, the others come at their own charge. Very many of theso first have saved enough at the end of three or four years to buy lands from Government and to become small proprietors. The cultivation of rice, millet, and coffee is multiplying. All this population has naturally brought in its train representatives of all tho trades necessary for the life of the community. In short a veritable little State is created in the space of a few years, thanks to the intelligence, to the enterprising spirit and to the capital of several men.

All this is done without the least interference of Government. When it was decided to make roads and a railway in the new territory opened to civilisation Mr. C—— and his friends decided for the first time to make an appeal to its aid. They asked Government to aid them in the construction, or at least, to guarantee a minimum dividend for the railway. For different reasons the Indian Government has refused this collaboration even under the latter form. Our four planters have taken their part in the enterprise. They have constructed themselves 56 miles (90 kilometres) of railway at their own expense. Today it returns to them 5 to 6 per cent and they are going to extend it.

But this abstention of the Government has had a happy counter effect and it is perhaps the most astonishing part of my authentic narrative, upon which wo would do well to carefully meditate. For instead of multiplying officials the Viceroy "in his Council," following the legal formula, has given a sort of delegation of the principal administrative and judicial offices to certain planters designated by him.

Government have found profit in this affair. Here is a country which, in its primitive state cost dear enough. It was necessary to keep in it a Resident with his assistants over and above a staff of forest keepers. And now, thanks to the sale and the leasing of lands to the taxes which begin to come in, this district, is supporting itself without costing a cent.

On the other hand, the planters are satisfied that a population, menaced by famine in these districts in their original state, have found here remunerative work which has been a benefit to everybody.

PLANTING AND PRODUCE.

COFFEE GROWING AT HOME.—The depressed state of agriculture at home leads to various speculative suggestions as to the possibility of growing plants hitherto associated with tropical climates. One day tobacco is talked of, another day it is coffee. Saturday's meeting of the Royal Botanic Society of London foreshadowed the cultivation of the latter tree. In the greenhouses are a number of coffee trees which have this season been remarkably fruitful. Mr. Sowerby, the secretary, had gathered some of the beans, which he had carefully roasted, ground, and decocted into coffee. This brew was submitted for the opinion of certain of the members known to be connoisseurs of the beverage, and their opinions agreed that it was excellent in every respect.

METAL TEA CHESTS.—Opinions are divided in the trade about metal chests for tea, but on the whole there is no prejudice against their use which may not be overcome, although the trade insist that lead lining must be used. At a recent meeting of Cardiff grocers the following letter on the subject was read from Mr. Randell, of the firm of Messrs. Randell and Sons, merchants, of Llanelly: "I have recently received a consignment of Indian tea, packed in 100 chests, direct from India, the same being of tinplate instead of wood, and lead lined, and I see in them very many advantages over tho old mode of packing tea. As the use of tinplates is a very important question now for South Wales and Monmouthshire, I venture to ask you to bring the matter forward at the opening of the Exchange, with a request that the members will be good enough to co-operate in any movement which may be started in South Wales to induce tea brokers, merchants, and planters to use tin plates for the purposes of tea packing, especially when it clearly shows several advantages over the wood chests now in use. What is wanted is the cooperation of the grocers and tea dealers of South Wales and Monmouthshiro to give it effect." This gavo riso to a general argument upon the subject of tea packing. One speaker said "tinplates would not be at all suitable for packing tea. Could they be prepared in the right way no doubt it would be a good thing, but ordinary would not do. It would have to be lined with lead." The Chairman: "Or washed with lead." The first speaker: "Yes, some other mode of packing is certainly desirable; at present the Indian teas are disgracefully packed. It would be a great boon to the retail trade if tea were sold in uniform packages of 50, 60, 80, or 100 lb. If the tinplates were lined with lead and hermetically sealed the thing could be done, but, of course, the retail grocers would have to be provided with appliances for opening the chests." The chairman said "they were all agreed, he took it, that the present system of packing tea was unsatisfactory to the retailer, but what could they do in the matter?" Ultimately a resolution expressing their approval of Mr. Randell's idea and suggesting that he should bring the matter before the Grocers' Federation was carried.—*H. and C. Mail.*

NEW TEA MACHINERY FOR CEYLON.

Messrs. Davidson, the well-known makers of tea machinery, will shortly introduce into the Island several new types of machinery used in the preparation of tea. The machinery we understand, will include an automatic tea-dryer of a new invention. This machine is designed on the endless webb principle and is fitted with an improved make of cast iron stove. A new withering machine and a Davidson steam engine for use in tea factories, both of new design, will also be placed on the market, we understand, early next year.

THE UNEQUALLED CLIMATE OF THE HILL-COUNTRY OF CEYLON.

When dealing more in detail with the climatic elements in the latter part of Mr. Douglas Archibald's pamphlet, attention is drawn by the writer to many features which only the microscopic eye of the Scientist, who never overlooks details, would have discerned. For example, our hill-stations are cooler than those of India at the same elevation although we are nearer the equator. In the Himalaya the rate of decrease with the ascent is one degree Fahrenheit for every 450 feet elevation. With us the rate is one degree for every 340 feet between Colombo and Kandy and one degree in every 260 feet between Kandy and Nuwara Eliya. Whatever may be the cause, and for practical purposes we may leave this alone, the result is decidedly in our favour, since we are not obliged to go so high or breathe so rare an atmosphere to cool ourselves as our less fortunate Anglo-Indian brothers.

Another feature peculiar to Ceylon from its propinquity to the equator is the small range of its monthly temperature during the year. Any one can easily see that on the Northern tropic where the sun has to travel 46 degrees from the Southern in order to reach verticality, there must be a greater range than near the equator when it never travels more than 23 degrees on either side of the Zenith; and this difference is exaggerated as we travel either poleward or inland where the presence of a solid surface accentuates temperature changes by its small capacity for heat and its great capacity for exhibiting heat or cold in the form of temperatures. Our small annual range in Ceylon applies to hills as well as plains and this, again, is a great advantage since it means that at Nuwara Eliya, for example, no month is excessively cold or hot as occurs at the best Himalayan sanitaria. To counteract the possible enervation produced by such a small annual change there is as Mr. Archibald points out, a remarkable compensation in the fact that the diurnal range of temperature is always greater than it is farther north or south, and even on an island like Ceylon when it should be less than on a continent in the same latitude, it is greater than at many Indian stations. This also means cool nights when the maxima during the day as with us are never very large, and even Colombo shows this when in July instead of a stuffy 80 at night after 83 in the day we have a comparatively cool 77. At Kandy and Nuwara Eliya the effect is still more marked; the mean daily minima at Kandy all through the hot weather never being greater than 70°, and at Nuwara Eliya, where the range is providentially smaller, never less than 50°. In other words, while an agreeable change during the day is experienced our hill stations are never too hot and never too cold. Of course, this in a great measure is due to the fact that owing to the double march of the sun over us in the year our hill stations experience in reality two summers and two winters of only half the normal dimensions of those outside the tropics.

The question of rainfall is another point on which the author throws some new light, since he points out the mistake of judging the average raininess of a place merely by inches or annual totals. The inches may fall in sudden plumps, as is shown by a comparison of rainy days at Hatton 207 with 203 at Nuwara Eliya, while at the former the annual fall is 158 against 94 at the latter, and the falls may be pretty uniformly spread over the year and not as in India be confined to the season of the S.-W. monsoon. By a judicious series of transportations, the visitor may almost escape both monsoons, and in any case meet with nothing worse than what is called a "Scotch mist" at Nuwara Eliya if he avoids certain months.

It is curious to find that we embrace in Ceylon almost all the most desirable climates in the world. New Zealand is represented by Nuwara Eliya; South Queensland or the Cape by Bandarawela; Sydney by Hatton with a few inches of rain off; Cairo with its hot summer expunged by Kandy, and that while this latter station has a summer heat no greater than Rome or Madrid; the winter *cold* of Nuwara Eliya is no greater than the summer heat of Edinburgh.

What are we to say after all this? Have we made as much of our blessings as we might or advertised them as much as they deserve? We think not and while undoubtedly the best advertisement such places can get is the reports that visitors carry away with them of the air they have breathed and the comforts they have enjoyed, we quite agree with Mr. Douglas Archibald that a supplement might be added to the caution to strangers on landing against the dangers of sunstroke, so as to make it read as follows:—"Beware of sunstroke and go to our Hill-country."

THE LANKA PLANTATIONS COMPANY, LIMITED.

The fifteenth ordinary general meeting of the shareholders of this company was held at the offices of the company, 12, Fenchurch Street, E.C., on 18th November.

The chair was occupied by Mr. George Allen, chairman of the directors, and the shareholders present were Messrs. F. Bois, E. F. North, A. Collinge, J. Hall, J. E. Dawson, J. Smith, J. Lee, and W. H. Haslam.

The secretary Mr. C. Robertson, having read the tnotice convening the meeting, and the minutes of the previous meeting having been read and confirmed, he chairman in moving the adoption of the report and accounts said:

Gentlemen, you will all agree with me that the duties before us today are pleasant and by no means difficult. I will deal first with the report which you have all received and are no doubt familiar with. You will notice that the coffee shipped to London was 1,571 cwt. against 789 cwt. last year, and realised £6,564. The acreage under coffee alone was 210 acres, and the trees, according to the latest reports, after maturing a good crop, were reported to be in excellent heart and condition; and as the superintendent is confident of his estimate, we may hope for fair profits for 1896. The total crop of cocoa gathered on Yattawatte amounted to 1,214 cwt., against 979 cwt. last year, and realised £3,038, and in spite of the very low rates now prevailing there was a good margin of profit left. During the season a further acreage has been planted, and forty-two acres of available land adjoining the estate have been purchased, the cost of the new planting and land having been charged to capital account. The estate is improving year by year, and the manager reports that there is every indication of a good crop for 1896. With regard to tea, there has been an increase of nearly 10,000 lb., which has realised an increase in cash of £1,600. As our teas are nearly all high-class teas, it naturally follows that we benefit by high prices. Mr. Bois reports that the estates are in good order, and everything points to a satisfactory result for the current year. Since the death (if I may term it so) of coffee we have spent £20,206 out of revenue in substituting cinchona for coffee, and then tea for cinchona. The directors propose to take advantage of the unexpected increase in the net proceeds of the coffee, to write off from the suspense account the

sum of £3,714, being not only the one-tenth usually written off, but also the sums of £799 and £1,021, which from circumstances beyond our control we were unable to write off in the years 1888 and 1889. This will enable us at the end of the current year to strike out of the suspense account the sum of £4,544 5s 7d charged in the year 30th June 1885, which by ten annual payments will have been entirely paid off. We are now able to declare a dividend of 4 per cent on the ordinary shares, leaving £1,270 to be carried forward. This is not only highly satisfactory to the original shareholders, but to those who have since bought shares in the company. I may mention that latterly there have been inquiries for shares at £6 per share With reference to the loan of £12,000 in the last balance sheet, we paid off £3,000 with some money we had on deposit, and desiring to reduce the interest we applied to our old bankers for a loan of £9,000, but the request was refused; it was, however willingly granted by the London and Westminster Bank, which paid off the balance, and we have thereby saved about £450 in interest. The most interesting subject to persons engaged in this industry is, of course, tea, and Ceylon tea is now so good that it *must* make its own way. I will give a few extracts from some of the leading brokers' circulars, which go to prove the truth of this. Messrs. Wilson, Smithett & Co., in their circular of a recent date, say: "Several Russian orders were in the market, and again comparatively few were executed, as they were generally for teas of exceptional character which certain home buyers were determined to have at almost any cost, but they had the effect of stimulating the competition and securing full prices, and leaving at the same time the reasonable hope of renewed orders at higher limits in the future. For the nine months the imports mark an increase of 5,800,000 lb, whilst home consumption has expanded to the extent of 2,000,000 lb and exports of 1,600,000." Messrs. George White and Co., in their circular of November 4th, report that "deliveries were 1½ million lb above the imports, so that the stock has been reduced by that amount since September 30th. For the four months from July 1st the quantity taken from the warehouses was more than 3½ million pounds over that received, indicating a very healthy condition of trade." Messrs. Gow, Wilson and Stanton, who take a great interest in these matters, report under date November 1st: "From North America reports are very encouraging, and there is every reason to believe that British-grown tea has now taken sufficient hold on the public taste, both in the United States and Canada to ensure a permanent and increasing demand for it, if only the work of the Indian and Ceylon Commissioners can be effectually and steadily carried on." I am not acquainted with the details of the work now being carried on in America, but this I may say, that when I was there recently a gentleman greatly interested in Ceylon tea complained to me that the tea was not made up to suit the tastes of the consumers. Another complaint was that the Ceylon Planters' Association is associated with the agent of the Indian Planters, and I understand that they occupy the same office. I may also say that I saw an advertisement consisting of a large block in which the quantities of Indian and Ceylon sold during the past year was marked, and of course the number of pounds of Indian tea sold looked much larger than those of Ceylon, putting Ceylon in an unfair position. I have sent this advertisement to our planting member of Council in Ceylon, pointing this out, but up to the present have received no reply. In conclusion I may say that I still continue to have a sanguine hope of the prosperity of the company, and that subject to climatic influences and other matters over which we have no control (for after all we are "tropical agriculturists" in the same position as farmers), the merits of Ceylon tea must come to the front. That small account of tannin is in its favour, and I think it may safely be said that we are on the high road to prosperity.

Mr. Ford North stated that he wished to make a few remarks in a friendly spirit with regard to the difference in the accounts of this company and others. With regard to the suspense account, it was very satisfactory to see that £3,700 had been paid off, but he was sorry to see that it had been taken off with one hand and with the other hand £1,256 had been added to the suspense account for machinery, buildings, &c. Most companies, he maintained, objected to a suspense account and charged all to revenue account. He would have liked to have seen this item not carried to the suspense account.

The Chairman, in reply, remarked that the directors courted rather than depreciated criticism on the part of shareholders. The new machinery and buildings were not likely to rust or wear out in a short time, as Mr. Ford North seemed to think, and he considered that what had been done had been done wisely. The price per acre of their cocoa land was £8 17s, and he had considered that the cocoa estate was one of their very best properties. He did not think that prudent men could have done better. They had paid 4 per cent., and had they wished to divide all their profits they might have paid a great deal more.

Mr. W. Austin remarked that he took a hopeful view of the prospects of the company. When the shares were very low he continually bought them, so that no one could say he took a gloomy view. He was the latest director who had been appointed, and he was extremely gratified at the way in which the business of the company was conducted. He had heard Mr. Ford North's remarks with great pleasure. The companies to which he, Mr. Ford North, had alluded had, however, great latitude, and if the suggestions he had made with regard to the accounts were carried out it would make the company appear to have earned a smaller profit than they had actually done. It would be a pity to issue new shares, as they would be at a discount. He considered that the Chairman had done a grand piece of financing in getting money at a low rate as he had done. The affairs of the Company were thoroughly well managed, and every £1 that was spent was severely criticised by the directers.

The following resolutions were put to the meeting and carried unanimously:—

Proposed by the Chairman and seconded by Mr. Pettit, "That the report and accounts be received and adopted."

Proposed by Mr. Austin and seconded by Mr. Pettit, "That the payment of a dividend on the 6 per cent. Preference shares for the six months ending December 31, 1894, be confirmed, and that for the six months ending June 30, 1895, be paid forthwith."

Proposed by Mr. Austin and seconded by Mr. Pettit, "That a dividend on the ordinary shares for the year ending June 30, 1895, at the rate of 8s per share, free of income tax. be paid forthwith."

Proposed by Mr. Ford North and seconded by Mr. Collinge, "That Mr. Allen, a director who retires on this occasion, be re-elected."

Proposed by Mr. Smith and seconded by Mr. Collinge, "That Mr. Edward Pettit, a director who retires on this occasion, be re-elected."

Proposed by Mr. Collinge and seconded by Mr Haslam, "That Mr. John Smith be re-elected auditor of the company for the ensuing year at a remuneration of £21."

Mr. Ford North proposed a very cordial vote of thanks to the directors and also the managers of the estates in Ceylon, and the chairman having briefly responded the proceedings terminated.—*H. & C. Mail.*

ENGLISH AGRICULTURE.

Norfolk, Nov. 4.

Farmers have indeed been having a bad time of it. Many farmers have been let out of cultivation, and others only kept in cultivation by foregoing all rent. However it is to be hoped, that things have at last touched bottom and that an improvement may be looked for during the coming year. No Government can guarantee good harvests, but a strong one, such as the present, can do much to help the struggling tiller of the soil.

BUILDINGS ON ESTATES: BALLARDIE'S AND OWEN'S PRIZE ESSAYS.

Does any planter want to build either a factory, cattle-shed, bungalow (large or small) or a set of lines, or to alter, or reconstruct anyone or all of these? If an experienced man, he at once prides himself on being what every good planter ought to be, and claims to be in his capacity of jack-of-all trades: a practical builder. In old coffee days, to engage the services of an architect was almost universally considered a useless waste of money. True, as regards coffee stores, very little variety was indulged in, the "stores" nearly everywhere having been designed and built on one unvarying plan. This was a custom that had more than one advantage: the cost was easily ascertained from the experience of others, and the native contractors became experts in constructing almost identical buildings wherever they went. The pulping-houses, however, demanded more variety of plan, and in constructing these the planter found his ingenuity considerably taxed. So, too, in the case of bungalows, every planter was free to follow his own taste and requirements,—if he did not—as at first nearly everybody did, early in the planting—era, run up a rectangular shed divided into three rooms with a long verandah in front. Those which were substantially built remain to this day, but often so transformed by "taking in the verandah" here, adding a wing there, that the original simple design is not easy to be distinguished. Well, all honour to the memory of the old planters, sturdy and independent as they were, and if mistakes were made and money wasted, why coffee could afford it, as it afforded many other items of expenditure that would surprise the economy enforced by strict Visiting Agents in these later days.

And it cannot be denied that a Tea Factory demands a greater practical knowledge of buildings than sufficed for the simpler coffee store. So, too, the greater number of married planters now have created a demand for more up-to-date homes and bungalows, while even the coolies are better housed. The old thatched roof on posts ten feet apart, open to all the winds that blow, will not do now-a-days for cattle, especially where manure is the object of their being, while also a vast number of valuable cattle are now kept for dairy purposes and for profits derivable therefrom. All these modern conditions call for greater care in the construction of buildings on estates for all these purposes, besides such subsidiary structures as lime-kilns, &c.

In 1879 Messrs. J. de Caynoth Ballardie and T. C. Owen wrote "prize essays" published together in a handy book on such estate "Buildings"; but like other works it came just too late to be of much service to the planter harassed by leaf-disease, loss and debt. But has not the time come round again when such a book ought to be one of the companions of every practical planter? How to design every conceivable building in an infinite variety of plans, is here given in detail graphically and textually, and even the old and expert builder will find valuable information in this book of designs and estimates. We can confidently recommend it to all in charge of tea and cacao estates and estates of every other produce as a reliable guide in designing and constructing and giving out contracts for every sort of building likely to be required in such places. This may be judged from the following list of the plans "to scale" embodied in the volume to which we have been referring:—

(1) BRICK KILN.—Section of kiln—plan of kiln—trough and section—yoke—drying shed and section.

(2) LIME KILN.—(1) To burn 150 cubic feet per diem—(2) to burn 250 cubic feet per diem.

(3) BRICKWORK MASONRY.—English bond and Flemish bond.

(4) WALLS' ROOFING CLIP.

(5) KING POST ROOF.—King post—queen post—struts—tie beam—principal—ridge piece—purlins—common rafter—pole or roof plates—wall plates.

(6) QUEEN POST ROOF.—Queen posts—struts—tie beams—principal—ridge piece—purlins—straining beam—common rafter—pole of roof plate—wall plates.

(7) HERRING-BONE STRUTS: 2 in. square.

(8) JOINTS OR SCARFS.

(9) BEAMS AND PILLARS.

LINES.—Twelve-room set of Lines—wooden roof, wattle and daub walls—kanganies' row.

BUNGALOWS.—Door and window frames—wooden plank ceilings—wainscoting—verandahs—chimneys—small bungalows—large bungalows.

PULPING HOUSE AND STORE.—Receiving pulping house and store (combined)—sections of pulpers—Walker's Gearless Pulper—Store Receiving House—Section of field Receiving House—Coffee spouting—waterbox—covered spout to carry water to outside hopper—Self-acting measuring boxes—Tube well—Cherry Discharge, Dams (composite and earthen, and wooden and iron doors) anicuts, weirs and spouts.

CATTLESHED AND PIGGERY.—Store for fodder—air passage—stone walls with permanent stalls—brick walls with moveable stalls—pillars—roadside cattle and pig shed.

ESTATE CARTROADS.

Eight plans illustrating buildings referred to in Mr. T. C. OWEN'S ESSAY, viz., Store and Pulping House—Cattle shed—big cattle shed—big store—pulping house—bungalow.

SCIENTIFIC INQUIRY INTO TEA CULTIVATION.

From the Secretary, Indian Tea Association, to the Secretary to the Government of India, Department of Revenue and Agriculture, dated Calcutta, 11th November, 1895.

SIR,—Referring to your letter No. 352-13, of 7th March, in which it was stated that, pending the appointment of a successor to Mr. Cotes, who had resigned his appointment in the Indian Museum, the Government of India regretted they were unable to make any arrangement for the investigation of tea blights in Assam, I am now directed by the General Committee to submit for the consideration and orders of the Government of India a memorandum drawn up by Mr. J. Buckingham, C.I.E., Chairman of the Assam Branch of the Association, containing suggestions for the appointment of a scientific officer for the tea districts.

2. I am to state that this memorandum has received the approval not only of the General Committee, but of the branches of the Association and also of the Planters' Association in Darjeeling, the Terai, the Dooars, and the Kangra Valley, who are all agreed that the appointment of such an officer as suggested in Mr. Buckingham's memorandum would be a very great benefit to the tea industry, and, as a natural consequence, to the trade of the country.

3. The General Committee feel that they can add but little to the suggestions contained in Mr. Buckingham's memorandum, but they desire to take this opportunity of tendering their best thanks to Government for having deputed Dr. George Watt, Reporter on Economic Products to Government, to prosecute investigations in the Assam province, which latter will, without doubt, when his report has been published, prove of the greatest value to tea planters and the industry generally. The Committee are awaiting with much interest the publication of this report, and in the meantime they would commend Mr Buckingham's proposal to

the most careful consideration of Government.—I have etc.,

S. E. J. CLARKE.
Secretary, Indian Tea Association.

[Memorandum *re* appointment of Scientific Officer for the Tea Districts, to be submitted hereafter to the Government of India.]

The tea industry having for some years past felt the necessity for a thorough scientific invstigation into the chemistry of the tea plaet and its cultivation and manufacture, desires to bring the matter before the Government of India for consideration and such co-operation as may be found possible.

2. It is understood that in a kindred subject *viz.* investigation connected with silk, such co-operation and even pecuniary support has actually been rendered by the Governments of India and Bengal. It is accordingly felt that the support not only of the Government of India, but also of Local Governments where tea cultivation is pursued, might reasonably be extended to an industry of such magnitude and importance.

3. The Tea Association fully appreciates the assistance which the Government of India have rendered, and are still rendering in the deputation of Dr. Watt, the Reporter of Economic Products, to investigate into the subjects of tea blights. Without anticipating the report which Dr. Watt is likely to publish, it may be said that he has convinced the planters in the districts visited that there is as much to be learnt on the subject of proper cultivation of the plant, as in that of the remedy of actual blights. But this involves a scientific investigation mainly of a chemical nature, which the planting industry unaided is unable to accomplish, not so much financially, as in the proper control and supervision of the operations of a scientific officer.

4. It is contemplated that a chemist of established reputation should be brought out to this country, or a fixed term of years (say five), to receive such alary as would ensure his devoting his entire energy o this enquiry, but on the distinct understanding that the result of his investigations should be the property of the Association. The selection of such an officer, it is felt, the Government of India would be better qualified to make than the Association.

5. The direct assistance which the Government of India, it is believed, could render, would be in the equipment of a laboratory, since the apparatus required might be utilized by Government in its chemical laboratories at the close of the contemplated investigation. It is also suggested that the major portion of the apparatus and chemicals might even be lent for the purpose here indicated.

6. In venturing to suggest direct aid, the Association considers that supervision of chemical inquiries is of the greatest importance, and for this purpose the chemical officer might be associated with one of the scientific departments of the Government of India.

This Association believes that the desired aim of the investigation might be frustrated through a scientific officer not being supervised, there being the liability of his attention being diverted from the main points at issue. But, in venturing to make this suggestion, the Tea Association desires mainly to obtain an expression of opinion from the Government of India, and the final scheme may be matured hereafter.

J. BUCKINGHAM,
Chairman, Assam Branch, Tea Association.

—*Indian Planters' Gazette.*

SALE OF AN ESTATE.

It is reported that Gangwarily Estate, West Dolosbage, has been sold by Mr. John Drummond to Mr. W. Blackett.

SALE OF COCONUT ESTATES.

The price paid Mr. Jacob de Mell by the Ceylon Tea Plantations Company for the coconut estates Siringapatha and Tursina is R325,000. Mr. de Mell purchased these estates about 15 months ago from Messrs. Akbar Brothers for R280,000.

GALATA GROUP.

Mr. Tunnicliffe has, we learn, sold these estates for R100,000 to Messrs. Cresswell and Elwes.

DRUG REPORT.

(From *Chemist and Druggist.*)

London, November 14.

ANNATTO—Five bags of dull dark Madras sold at the low price of 1¼d per lb

CAFFEINE Quiet. Some business has been done this week at 19s per lb on the spot.

CROTON-SEED—At today's auctions a parcel of 15 bags of seed from Colombo, not quite so nice as what offered at the preceding sale, was well competed for and again realised an advance of a few shillings, the whole lot being sold for 50s per cwt.

CUBEBS remain quite neglected. There was a fairly plentiful supply at auction, but no berries were sold; privately 32s 6d per cwt would be accepted for fair slightly stalky quality. At auction a bid of 27s was rejected for some berries of fair quality, slightly stalky. Seven bags cubeb stalks and berries sold without reserve subject to paying charges at 5s per cwt.

GAMBOGE was in very good demand today, medium qualities being steady. Of 40 packages, 22 realised £10 7s 6d for good pipe, partly blocky, of bright fracture, and from £9 7s 6d down to £9 for partly drossy and blocky pipe ricey mixed to fair blocky pickings.

KOLA—Holders are disposed to ask more money, viz, 1s 3d per lb for good bold washed and 1s per lb for small washed. It is doubtful, however, whether those prices given can as yet be made. At auctions today 28 packages were all bought in, bids of 10d being rejected for good washed quality. We understand privately that 11d per lb has been paid for fair washed from Africa.

NUX VOMICA—One hundred and sixty-six packages of small to fair pale quality from Bombay were all bought in today at 5s 6d per cwt.

ESSENTIAL OILS—Cajuput oil 10 cases were bought in. Cinnamon oil sold, subject to approval, at 4½d per oz. Citronella oil is again dearer, 1s 5d per lb being now asked on the spot, while offers of 1s 3½d per lb c i f for oil in drums have been refused this week by Ceylon exporters, who say that there is no more oil to be had. Lemongrass oil is also very firm on the spot at 2d to 2¼d per oz, without further arrivals in sight The market in Cochin is said to have been cleared.

QUININE—At the end of last week there was a sale of 20,000 oz German bulk (B & S or Brunswick) at the price of 1s 1d per oz, showing a further decline of fully one-eighth. Since then the market has become slightly firmer again and buyers offered at 1s 1⅛d, which has not, however, been accepted. For second-hand German bulk on the spot 1s 1⅛d has been refused this week. Offer of 1s 1d per oz for Fabricca Lombarda quinine have also been refused, and the market is, upon the whole fairly steady.

VANILLA—The supply at today's auctions was fairly large—viz 266 tins—but almost the entire quantity was made up of arrivals from France, the principal portion consisting of stocks which had been held back by large French holders. Good quality was well represented, but buyers were not such keen purchasers as at the last auctions, and the prices today ruled very irregular, and were on the average about 1s to 1s 6d per lb lower. The total quantity offered weighed about 4,200 lb, and was nearly all disposed of.

THE UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA.

Following up the acknowledgment which we made of a copy of the proceedings of this Association for the year we would mention that the volume which is of a very convenient size, consists of 191 pages including the appendix. The main part of the record is a report of the proceedings at the second annual general meeting held in August last, and the variety of subjects then discussed shows how very important the organization is. We trust that it will long continue to keep a strict watch over all matters connected with the planting industry. After the report comes the accounts showing a balance on hand of R819, then correspondence, and lastly the appendix in which we notice is incorporated a copy of the Ceylon Labour Ordinance.

MEXICAN COFFEE LANDS.

A former Ceylon planter, with large experience in the coffce countries of the world, has studied the possibilities of Mexico as a coffee-growing country. In an interview printed in the Chicago *Inter-Ocean* he says:

"I journeyed to Mexico to inspect the Mexican lands suitable for coffee from a business stand point. With hardly an exception, I found chaos reigning supreme, as far as cultivation was concerned, little or no attempt having been made to do anything but pick the crop. After thoroughly inspecting some of the newer districts, with which the older districts cannot be compared for a moment, it surprised me that these older districts had ever been taken up at all for coffee, the proximity to the railway being the only valid excuse, as neither in climate nor soil can these older districts stand their own.

"In choosing coffee lands what should be looked for first and principally is a suitable climate. Coffee wants a regular temperature of say, from 60 to 80 degrees Fahrenheit all the year round, with a rainfall of from 100 to 120 inches, the latter preferred; in fact, a warm humid atmosphere; when you can ge t that it matters little about the latitude or elevation. It is true that the high elevation bean is generally the most delicate in flavour, but the difference in price is so little that it will not nearly compensate for the difference in crop, and the planter, if he is wise, will confine himself to what will fill his pockets the quickest.

"Two districts specially caught my fancy, the one on the Tonto River, partly in the State of Oaxaca and partly in the State of Vera Cruz. I saw thousands of acres of magnificent rich loam covered with heavy forest which could be converted into most successful plantations. These districts are par-excellence, the home of the sugar cane. The district, however, on which my choice rested, and which in every way filled my bean ideal of the coffee district, was on the Gulf of Mexico side of the Isthmus of Tehuantepec, inclosed between the two rivers, Uspanapa and Coatzacoalcos, and intersected by others. Most of these rivers have deep water and are navigable far into the interior. Within this tract of country there is a large per cent of the finest coffee lands I ever saw in my life. I was thoroughly surprised with the rich, black soil and its uniformity; he nice, easy lay of the land, with its good drainage: ts plentiful supply of live mountain streams, its fine navigable rivers, within easy reach of the seaports, where goods can be shipped to all parts of the world; its plentiful supply of fine, robust natives, willing and ready to work; its production in a wild and semi-wild state of coffee, sugar, vanilla, cacao, rubber, fruits of all kinds, corn and other products, and lastly, and a very important thing to the shelter, its fine, healthy climate. The residents of this district claimed for it a temperature and rainfall exactly in accordance with my views of what was perfect for coffee and my first glance at the vegetation verified their claim.

"The climate as regards health being one of the principal things to thoroughly investigate, this I did, and I found, first, that the death rate in Minitlan, the largest and most important town in this district—being also a shipping port—and seemingly in the most unhealthy part of it, is only 8·7 persons, in the 1,000 per year, while the death rate of Chicago averages about 18.2. The old residence Americans and foreigners speak highly of it in that respect.

"All over Mexico coffee is handled, almost without exception, in the most slovenly manner, being neither cultivated nor prepared for market properly." [Nevertheless some of the finest coffee seen in this market has been of Mexican growth.—Ed.] "If the old districts give handsome results with the present system, I venture to say that in the district referred to, on the isthmus, under judicious management, being essentially a coffee district, which most of others are not, the results, I think, could safely be multiplied by 10.

"There is any amount of valuable timber which can be made to pay hansomely, as well as growing corn between the rows of coffee, which forms a good shade for the young coffee plant, and yields from sixty to eighty bushels per acre, and at least two crops at that rate per year. This, at the local rate for corn—about $1·25 silver, or about 60 cents American —would, I think, almost, if not altogether, clear expenses of cultivation. The outlet to this district is Coatzacoalcos, where at present two steamers per week arrive and go on to Minitlan, load up and return to Vera Cruz, where they tranship their produce into the large New York and European steamers. This is necessary on account of a bar at Coatzacoalcos, preventing any steamer drawing more than fourteen feet of water coming in."—*American Grocer.*

THE FUTURE OF PETROLEUM AS A FUEL.

In an article contributed to the *Colliery Guardian*, Mr. R. Nelson Boyd, M. Inst., C.E., discusses the possibilties of petroleum replacing coal as a fuel for general purposes in this country. After referring to the numerous experiments and trials that have been made with liquid fuel, including those of Mr. Holden, on the Great Eastern Railway, where several locomotives are at present running, and have been for a number of years, with liquid fuel, he goes on to observe that the adoption of petroleum as a fuel to any practical extent has been limited to South Russia up to the present time, and it appears that its general use is a matter for the very distant future, except under special local circumstances.

The necessary elements for the economic use of petroleum are quantity and cheapness, and these are only to be found in South Russia—at any rate up to the present time. The production of crude oil in the South Russian field is about thirty millions of barrels, giving say, three to four millions of barrels of residuum, or so called "astatki," equal to about half a million tons, which represent in heating power one million tons of coal. This is, of course, a large and a sufficient supply for local purposes, including the steamers on the Caspian Sea and the locomotives and as there is no other use for the astatki, it is obtained at a low cost. But this is the only petroleum-producing field in the world where circumstances so favourable to the use of liquid fuel exist. The Russian oil is of such a character that in the process of distillation it leaves a large percentage of residuum, whereas in other fields almost all, if not all the distillates from the crude oil are applied to commercial purposes, and sold at prices which preclude their use as fuel except [for special purposes, such, for instance, as heating where space and cleanliness, rapidity of lighting and extinguishing the fire are dominant over the question of cost. But these special applications cover only a small field of consumption, and in reality, as a competitor with coal as a fuel, petroleum is not in the market, at any rate in tho country. In addition to the high cost comes the question of supply. The quantity of petroleum produced is certainly considerable, but when compared with the amount of coal raised in the world the figure sinks into insignificance—that is, from the point of view as fuel.

It would be difficult to to estimate with exactitude the total production of petroleum in the world owing to the want of correct data. In the United States the returns show over 2,000 millions of gallons raised in 1894; in Russia, about 1,200 millions of gallons; and in Galicia, Austria, 50 millions of gallons; but the statistics of other contries are very uncertain. It may, however, be roughly estimated that the world's production will amount to between 4,000 and 5,000 millions of gallons. A very large production has sprung up in recent years in the far East, the statistics of which are not easily obtainable; but, taking the total productien at 5,000 millions of gallons— say, 20 millions of tons, equal in calorific heat to 40 millions of tons of coal—we arrive at a figure which represents but a very small percentage of the world's production of coal. This is assuming the entire production of crude oil to be used as fuel, whereas only the small production of Russian

astatki is available for the purpose, if we eliminate the refined oils, burnt in so-called petroleum stoves, which are practically lamps, the cost of which is too high to enter into competition with coal for industrial purposes. The demand for illuminating and lubricating oils, as well as for other distillates of crude oil, is equal to the supply at present but is increasing day by day, and the produce of the new discoveries is being absorbed by the growing demand for the various petroleum products. Among the uses of these distillates must be remembered the oils used for enriching gas, and in petroleum engines, which though not applied directly as fuel, replace a certain, but a comparatively small, amount of coal.

Under these circumstances, it seems futile to look upon petroleum as a competitor of coal as a fuel, at any rate for the present or the near future. It is somewhat curious to note how slowly the already known petroleum fields are opened out in the face of a large demand and a lucrative trade. It is really only in the United States and in South Russia that the deposits are worked to any great extent. Crude oil has been known to exist in abundance in Peru for many years, yet the production does not seem to increase. The same may be said of the deposits of Japan, Java, Sumatra, and other fields in the far East which have been left in abeyance until quite recently. In Mexico and other South American States very good indications, to say the least, have been discovered, but they have not been practically followed up by the expenditure of any capital. The European fields, other than South Russia, are being opened out with much reserve, as if an opinion prevailed among capitalists that petroleum was but an ephemeral product, with not much present and no future profitable life. Yet the United States raise 2,000 millions of gallons of crude oil, and dispose of it all to advantage.

So long as this reticence of speculation in petroleum development prevails, the production will not become formidable, and oil will not be extensively applied to industrial purposes.—*Indian and Eastern Engineer.*

CEYLON PRODUCE.

COCONUT OIL.—The market is very treacherous, leaving the brokers in the "high seas." Even our old friend, "Peruma" is staggered at the present status of the market. Very conflicting reports come from all quarters *re* coconut crops and the battalion of millers and dealers take them for what they are worth—often swallowing an occasional "pill". A few days ago, the market was steady at R337·50 per ton f. o. b., and after gradually showing a tendency to an increase, reached the climax of R340—but only to fall back immediately in two ranges to R335.

COPRA.—The arrivals are few ; and the quality is not much to be admired. For some weeks, hardly anything has come for the manufacture of white oil. Prices range from R38·50 to R47.

POONAC.—What a fall, compared with the prices fetched sometime ago ! Good mill can now be had for from R45 to 47·50 per ton f. o. b.

COFFEE.—Plantation, new season's crop is quoted at R84·85 ; but a parcel changed hands last week at R82 per cwt. f. o. b. In Native firm offers are given at R72 and R71 ; but this is all moonshine as at those prices no mortal with a spoonful of brains can operate upon. R68 is nearer the mark.

COCOA.—The season is in full swing, and since the middle of last month hundreds of hundred-weights are almost daily brought down to houses of Europeans, Sinhalese and Tambies. The latter two have representatives upcountry, who are buying largely for them. Prices locally range from R32 to 45 per cwt. A fine parcel from "Woodsley" changed hands yesterday at R43 ; while "Gangoruwa" and beans from other well known estates are in the hands of brokers.

CARDAMOMS.—The season's crop has not been a success, and this is due it is believed to the circumstance that, off and on during the whole year, there have been pickings. There is a very great demand for Malabar from Bombay and the Borah and Parsee merchants have run up prices from R1·06 to R1·28 to 30 per lb. The European market supply will almost be *nil* in "Malabar." It is only recent by that Bombay has taken a fancy to Malabar. In the past its pet was the well bleached, white bold Mysore.—Local "Examiner."

PENGERANG PLANTING CO,

The ordinary general meeting of the Pengerang Planting Co. was held in the Exchange Rooms today at noon, the Hon'ble G. S. Murray (chairman) residing. There was also present Messrs. W. Hutton and E. J. Nanson, directors, and Messrs. A. P. Adams, McBain. Dittmar, Eckhardt, W. W. Bailey, Manager, and Mr. A. J. Gunn, Secretary.

The Chairman said in adopting the report they would at the same time adopt the propositions that were put forward in it, that was, a dividend for nine months at the rate of 20 per cent per annum, absorbing a sum of $10,500, and that the amount passed to rest account should be $4,000, which would leave a balance of $14,052·04 to be carried forward to new account. He hoped that the shareholders would look upon that report as a satisfactory one. The Company had now, he trusted got to such a stage that they might hope to continue to prosper. It had not in the past been a very prosperous concern, and there were many reasons why in the early days of their enterprise they paid no dividends at all. They made many mistakes as a pioneer company in these parts, and they had other difficulties to contend with which he need not enter upon at that meeting. He hoped they were in smooth waters now. The only thing which occurred to him as at all likely to mar their progress, and it was certainly a very important one, was whether the price of coffee was to be maintained. That was a point which everybody interested in a coffee venture should keep clearly in mind. At present the price of coffee ruled very high : some were of opinion that the price would still improve, others held a contrary view. He was not prepared to say much with regard to the views which had been expressed as regards the cultivation of coffee in other parts of the world falling off, as no definite and reliable information could be got. They had to accept the good things as they came, and hope for the best in the future. He did not think it was necessary in the meantime that they should start any account for the depreciation of the estate. As a matter of fact the property was improving in value every day. No one knew the life of a Liberian coffee estate, and it seemed to him that so long as they kept on adding to the area under cultivation the estate was in a thoroughly sound financial position. It was carried, that the report and accounts as submitted should be approved and adopted.—*S. F. Press.*

NORTH BORNEO NEWS.

The Government is advertising free grants of land up to 500 acres in extent for the cultivation of Tapioca.

A very large extent of land, flat and of fertile soil has lately been discovered between the range in Ulu Lingkabau, (a tributary of the Sugut) which has Makatol hill at the northern and Mount Talin at the southern end—and the Bongon River above Timbang Batu. The locality is blank on the latest map. The land in question would appear to be accessible without much difficulty from Marudu Bay, the most easy road being up the Benkoka river to where a walk of half an hour brings one to the Tinandukan Nilampan Hill at the edge of the flat, which takes over four hours to walk across. Pangeran Mahomet of Sembali will act as guide to any one wishing to prospect.

The wet weather, succeeded by a spell of sunshine has benefitted the Tobacco crop to a large extent. —*British North Borneo Herald,* Nov. 26.

VARIOUS OILS.

(*From Semi-Annual Report of Schimmel & Co., Fritzsche Brothers.*)

Leipzig and New-York, Oct., 1895.

CINNAMON OIL, CEYLON.—In conformity with the opinion which we expressed in our Report of April last, an enormous change has come over the market-values of this important article in the course of the past few months. The quotations for cinnamon-bark of the "usual assortment," (which is the ordinary condition of sale of cinnamon in wholesale quantities for shipment,) have risen from 8d to 11d per lb., those for cinnamon-chips, the raw material for the distillation of the oil, from 2d to 2⅝d per lb., or about 30 per cent. As the existing cheap stocks have been disposed of, the finer grades of cinnamon oil have in turn followed the upward course of the market, and it is therefore probable that this long neglected and unreasonably depreciated article will again acquire its proper position shortly. The cultivation of cinnamon has been just as unprofitable in Ceylon as the manufacture of cinnamon oil. Many planters have given up the culture and it is therefore impossible to deny that the present movement in the price of bark and oil rests upon a solid foundation.

In order to place ourselves in a position to form an opinion of the quality of the cinnamon oils of the London market, we caused to be sent to us a number of original bottles containing oil imported from Ceylon. The examination of these samples convinced us that there was not a single genuine oil among the lot, but that they were all largely mixed with cinnamon leaf oil. The following brands were examined:—

1. Cinnamon bark oil. N. G. de Silva. 2. Kaderana genuine Cinnamon oil. First quality. Distilled in Ceylon. 3 Genuine cinnamon oil. First quality. Distilled at Ekelle. T. A. Jayasekera. Colombo, Ceylon. 4. Charles Mendis Kaderana. Purest Plantation cinnamon oil. Colombo, Ceylon. These figures clearly show that none of these oils contained less than 50 per cent of cinnamon leaf oil. We do not allege, however, that this has been added to the cinnamon oil on purpose; in fact, it is more probable that in Ceylon the leaves and bark of the plant are distilled together, and that this is the cause of the inferior quality of the oil.

CITRONELLA OIL.—The price of this article, after having remained at the lowest level for several years, commenced to advance gradually in January of the present year and lately reached the highest point of recent times with a quotation, in Colombo, equalling 1/3d, or $0.30 per lb.

The statistics, which show a very large export prove that the cause of the advance does not lie in a scarcity of supplies at the point of production, consequent upon a failure in the crop, but that it must simply be attributed to the constantly increasing use of this popular perfume. In particular it is said that a large English soap factory has recently commenced to use citronella oil, and has entered into contracts for large quantities with British wholesale drug-houses. It is added that the latter experienced some difficulties in fulfilling their engagements with respect to the delivery of the oil, and that, as they had accepted all risks, trusting to the long-established stability of the quotations they found themselves compelled to pay high prices, and not only to buy up everything available in England, but also to secure supplies from America.

At any rate it is certain that the speculators have received a wholesome lesson.

Vigorously supported by our New York house, which had purchased very large quantities of citronella oil before the commencement of the rise, we have been able to fill the requirements of our clients without stint and at moderate quotations. Careful investigation enables us to state that no reduction of price is at all to be expected in the near future. Moreover, considering the increasing consumption of the article, which is strikingly shown by the export-statistics reproduced below, it seems to us impossible that the price of the oil should again fall to the former bottom-figure.

Citronella oil is now generally tested in Ceylon according to the method published by us. That process has come to be considered authoritative in cases of dispute. It was certainly published just at the right moment for closing the door to further demoralisation of the trade in the article.

In an experimental investigation recently made by us for a leading importer of citronella oil, only one out of four samples stood our test; the other three being adulterated. It is true that the latter gave a clear solution with from 3 to 5 parts of 80 per cent alcohol, but they turned cloudy upon the addition of further alcohol, and caused a precipitate of a foreign substance at the bottom of the flask. This deposit did not consist of petroleum, but probably of East-Indian Gurjun-balsam or wood oil. An exact identification of the adulterant was prevented by the smallness of the samples.

CAMPHOR.—The advance in price in this indispenable article is due to the speculative tactics of a London capitalist and is therefore, at any rate in the extent it has assumed, without a solid basis. The question whether it is likely to be prolonged much further cannot be answered. At any rate there is very little spirit of enterprise shown for the article at its current market-rates, and businesses in the drug are restricted within the narrowest limits.

The question whether the island of Formosa will pass entirely into the possession of the Japanese is only of secondary importance. If that should be the case, however, the Japanese will hold the monopoly of the production of the article, and, with their notorious astuteness, they will then in all probability succeed in discovering a means of preventing direct shipments from Formosa, thereby maintaining prices, if not at their present level, but at a figure which will secure them a handsome profit.

The average price of Formosa camphor during the last thirteen months has been as follows:—

1894 September per cwt. 67s., 1895 August per cwt. 160.

Crude Japanese camphor reached its highest point (up to the present) in the middle of September, when 210/ per cwt. was quoted for it.

It scarcely requires mentioning that under the prevailing conditions no binding quotations for refined camphor can be given.

JOHORE COFFEE ESTATES.

The local coffee estates are looking well and good pickings are expected next month. On Theobroma the new clearings are looking very well, especially the swamp. Another swamp of about 50 acres is now being cleared and should this be as successful as the present one, it is hoped the future will be brighter then it hitherto has been. Mr. Abrams, the proprietor, is to be admired for his perseverance, as Theobroma is the only estate out of five originally opened up in the Pantei District still working. Mr. J. M. Crichton, an old Mysore coffee planter of over 15 years experience, has taken over the management of the Pulau Layang estate. A new clearing of over 40 acres on this estate, commenced by the former manager, has been discontinued.—*S. F Press.*

EDRAPOLLA TEA COMPANY OF CEYLON, LIMITED.

Mr. Porter, who represents this new Company in Ceylon, has, we understand, received a telegram from London informing him that the Company has been registered.

A NEW INSECTICIDE.—A gentleman in Calcutta, "who has made a special study of the subject, and has an extensive knowledge of the virtues of Indian plants," has, it appears, discovered a "perfect" insecticide and destroyer of mites and blights. His insecticide has the merits of simplicity, economy, and efficiency, while it has the great advantage of being non-poisonous to human beings, horses, dogs, etc. The new insecticide is as yet a secret, the discoverer holding back until he can make suitable terms for its disposal.—*Madras Times*, Nov. 28,

PLANTING AND PRODUCE.

TEA IN THE UNITED STATES.—At the Food Exposition held at the Madison Square Garden, New York, the Indian and Ceylon Tea Court is a prominent feature. It is hung with rugs, and decorated with photographs showing the tea plantations of India and Ceylon, scenes in the tea fields, and the different processes of manufacture. The various interests have combined, waiving their own speciality, and united in a campaign to popularise Indian and Ceylon tea. A different blend or brand of tea is served to visitors each day by lady attendants, who set forth the virtues of Indian or Ceylon tea. The New York correspondent of the *Grocer* says apropos: "One cannot help admiring the tenacity with which the advocates of India and Ceylon tea have clung to the American field. They are determined to win, and their very aggressiveness and persistency have won the admiration of the people and traders, and secured for Indian and Ceylon tea recognition of its claims, as against Japan and China tea. Progress is being made, and in the right direction. With many consumers Indian and Ceylon tea will never be popular, they not liking the heavy liquor and sweetish taste. In each section of the United States a different sort of tea is in favour. Thus in New England and the Middle States the black tea of China is most popular, notably Formosa Oolong, although Philadelphia takes more kindly to Foochow. A great deal of mixed tea is sold, but these mixtures are not scientifically made, nor is the American grocer given to the use of machinery for sifting or blending; ten chances to one he will mix at random two or three sorts in the scale, while the customer watches the operation. The art of blending is very imperfectly understood here, which makes your correspondent think there is a field which English blenders might work with profit. Such tea does not encounter the strong prejudice which is shown towards straight teas of the Indian type. Japan tea is largely consumed in the more recently settled States, which also take the ranker sorts of coffee, while the older States prefer the milder sorts. It is incomprehensible to many why Japan tea, with its astringent, rank flavour, is so popular. I recently met a chemist who claims that flavouring Oolong tea with vanilla makes a delicious drink, and one which would please the American palate. The putting of a vanilla bean into a lot of tea for a short time is all that is needed. I have never tasted tea so prepared, but think that there is enough promise of success to warrant the experiment even in England. Those qualities which enable John Bull to open markets all over the world will be victorious in time in giving him a good market in America for Indian and Ceylon tea."

THE EFFECT OF TEA ON THE DIGESTION.—We are so used to the unmitigated abuse of tea that its condemnation with faint praise is quite a relief. Dr. McKechnie,* of Colombo, has been making experiments with tea, with a view to ascertaining whether that popular decoction has the effect on the digestive organs ascribed to it. As the result of his investigations, Dr. McKechnie is of opinion that the tannic acid in the tea is not the injurious agent, but that the undoubted injury which arises is caused by some of the less soluble extractive matters. He is inclined, says the *Lancet*, to think that the action of tea is not so injurious as some writers think it to be. It greatly depends on the method of infusing whether its action is injurious or not. Long-infused teas seem to extract some substance, possibly an alkaloid, that has an inhibitory action on the nerves of the stomach. Dr. McKechnie also states that an infusion of tea of twenty minutes with the tannic acid precipitated has a similar bitter taste as the same tea with the tannic acid present, so that the bitterness in long-infused tea seems not to be due to the tannic acid, but to some other ingredient. Moral: Let the consumer know that tea should not be boiled in the same copper with the family washing, and that even twenty minutes' stewing does not improve it. Avoid long-infused tea unless you wish to extract the "some other ingredient" here referred to, because otherwise you may become a martyr to science without discovering what that 'other ingredient" really is.

* Really "Dr. P. Mackechnie Short."

COCONUT BUTTER.—According to an American paper an extensive factory has been established for the manufacture of coconut butter, which is already being made at the rate of 10,000 lb. a day. The crude coconut oil, it is stated, is received from Cochin in tierces of 2,000 lb. each. This oil is almost colourless and tasteless. After passing through two processes, which are kept secret, it emerges white and granular, and afterwards it is churned with skim milk or butter milk to give it a butter flavour. At present most of the commodity is sent out in its natural white colour for the use of confectioners and cooks in restaurants, but that which is sold for table use is coloured to resemble butter, and for the best quality it is intended to add a little cream before churning. The so-called butter is said to possess a clean, sweet flavour, and to keep remarkably well. The oil from which it is chiefly made is declared cheaper and better than "neutral lard," emulsifying more easily with skim milk, and being more difficult to detect when mixed with real butter.—*H. & C. Mail.*

DOMINICA FOR PLANTERS: HIS HONOR P. A. TEMPLER.

We are indebted to a correspondent for the following extract from a letter of His Honor P. A. Templer (such is his official designation) dated the 2nd August last which he supposes "may be of general interest especially at the present time when Plantation Companies seem to be all the rage." Since it was written Mr. Templer has had practical experience of anything but a pleasant nature, that Dominica is not quite as healthy as he believed. He describes the heat in August as equal to that of Colombo in April." Mr. Templer writes:—"Dominica is very healthy and if we could only get some money into it and a few Ceylon planters to open it up, it might do great things. It has as rich a soil as any place in the world, abundant rainfall, and *in the hills* a perfect climate. Some 80,000 or 90,000 acres of virgin forest full of fine timber are just waiting for men with capital to come and cultivate them with anything they like to grow. I saw a neglected patch of Liberian coffee away in the forest the other day, which was a little over two years old, bearing well and utterly unmindful of the fact that no one ever came near it or looked after it from the day it was planted. Any one can have the land for one pound an acre."

CEYLON INVESTMENTS IN JAVA.

From what we hear of the results of the investment of Ceylon capital in coffee in Java the capitalists who have cried out against the local Government for withholding sales of Crown land and so forcing capital to find an outlet elsewhere have not much cause for complaint. Two and a half year old coffees giving 4½ cwt. an acre is equal to anything in Ceylon in the old coffee days, and a coffee estate in Java must be a finer property than the best tea estate in this island at present prices asked for estates or for jungle. There seems to be no difficulty about getting land in Java, and with the splendid soil there, and facilities for working the wisdom of planters having a second string to their bow instead of overdoing the tea output and swamping the market ought to be apparent to everybody.—*The Indian and Eastern Engineer.*

THE AUSTRALIAN LADY-BIRDS RECEIVE KIND NOTICE IN HAWAII.

SUCCESS ON COFFEE.

Mr. J. Marsden, Commissioner of Agriculture in Honolulu, writing to us on October 28th, reports :—

I mail you under separate cover the August number of the *Planters' Monthly*, in which you will find an account of the good work done by the Cryptalaemus Lady-bird on the Coffee blight in Kona, Hawaii. We are the more eager to see lady-birds at work in Ceylon.—The extract referred to is as follows :—

Kailua, North Kona, Hawaii, Aug. 8, 1895.

EDITOR "PLANTERS' MONTHLY":—

Some eight months ago I wrote to you concerning the lady-bird which had been introduced to prey upon our coffee blight, expressing doubt, as to its utility, and until May of the present year, my remarks seemed to hold good, as, up to that time, very few specimens in any stage could be found, and the increase of *Pulvinaria* was simply terrible.

In his reply to the resolutions adopted by the local Associations on April 5th, Mr. Marsden informed us of the habit of *Crytolæmus ?* taking a winter rest, and some weeks afterwards an increase of the lady-bird was apparent on guavas growing in the vicinity of coffee, on which the origuinal colonies had been liberated, but principally at a point about three miles on the Thurston road at an elevation of about 1,000 feet. Spreading from this place they have travelled in all direction, and are now to be found from the beach up to 2,000 feet on the mountain side, their distribution having been materially aided by large quantities of pupæ having been collected and carried to various parts of the district. So far they seem to breed more rapidly at low elevations and show a preference for blight upon any tree but the coffee. It is, however, gratifying to note that, having cleared out the blight on other vegetation, they take to the coffee, as a last resort, and keep on until that too is clean.

The work of *Vedalia Cardinalis* on the cottony cushion scale in California has hitherto been regarded as an exceptional instance of the complete extirmination of an insect pest by a predaceous enemy; and, in a recent letter from the Washington Department, a doubt is expressed as to the wisdom of relying too much in that direction. The work of *Cryptolæmus Monstrousers* in the *Pulvinaria psidei* will, however, so far as present indications show, be just as remarkable as that of *Vedalia* in California, if it remains as industrious as it is at present.

Now that the dreaded White Aphis has been completely exterminated by *Rileyii*, the hopes that *Cryptolœmus* will inflict a similar fate upon *Pulvinaria* is making our Kona coffee planters jubilant and Prof. Koebele, as well as Mr. Marsden, will occupy a warm corner in their hearts.—Yours faithfully,

WILLIAM G. WAIT.

THE NEW QUININE FACTORY.

The opening of the new English quinine-work at Stamford Hill, which we announced in our issue of last week, is not likely to have a serious effect upon the market-position of the drug. It is true that the entire output of the factory for the present month is said to have been sold already, but the works are described as only of "moderate capacity." The chief point of interest in the situation is that the new factory is the only one in Europe not bound by the "agreement," "convention," or "understanding"—call it what you will—which has existed for more than a year among the older makers, and has given a healthy tone to the quinine-market. The Imperial Quinine-works may set out on their career with the best possible intention against price-cutting, but theirs is an unknown brand, and they will naturally have to pay for their comparative obscurity as a manufacturing concern by accepting a lower price for their article than better-known makers. We have no reason to doubt the accuracy of the statements that were publicly made last week with regard to the excellence of the new quinine, but it takes a long time to convince the average consumer, especially a British one, who is proverbially loath to leave his time-honoured sources of supply. Now, the fact that the new company, in spite of the alien origin of its leading promoters and its chemist, appeal specially to consumers of English quinine, will probably render it necessary for them slightly to undersell their rivals for a long time in order to establish a sure footing. If the makers already in possession of the market refrain from retaliating, things may settle down without much trouble into a condition in which the new English brand will assume a market position analogous to that taken by a certain quinine among German brands. But should the older makers be so ill-advised as to declare war upon the new comer, we may possibly again return to the price-cutting days of 1892, when quinine was purchaseable below 10d. per oz., and, possibly, to a renewal of the system of unrestricted selling for forward delivery at competitive prices, which was responsible for the accumulation of such an enormous stock of second-hand quinine in the hands of speculators.

The new factory starts at a time when the older manufacturers were believed to be contemplating an all round advance in their quotations early in the coming year. From the quinine-makers' point of view the market has been mending for some time, notwithstanding the fact that there has been no improvement worth speaking of in the second-hand quotations, and that the makers' prices have remained unaltered for months. The second-hand stock of quinine in London has been reduced to manageable proportions, the cinchona bark supply in this country is too small to place any serious impediment in the way of a rise, and at least one of the large German quinine works has been deliberately kept closed all through the summer months. Only the Java producers remain hopelessly disunited. Their exports of cinchona bark last month reached the enormous total of over 1,200,000 lb. (1,100,000 Amsterdam lb.), and in their present disorganised condition they are almost at the mercy of the quinine-makers, so far as the price of their produce is concerned. At the present time the quinine manufacturers pay for the quinine in the bark only about one-fourth of the price at which they quote their finished product, and if only the second-hand stock of quinine were smaller than it is, they would not be at all badly off. For the sake of the stability of the industry it is to be hoped that they will admit the new firm into their comity with as little friction as possible. On the other hand, the brokers who at present act for the new factory are too experienced in questions relating to cinchona bark and quinine to be likely to provoke a contest of price-cutting.—*Chemist and Druggist.*

LIBERIAN COFFEE AND COCOA PRICES.

Dolosbage, Dec. 8.

The last London market reports contain the announcement that 86 bags Liberian (Ceylon) fine yellow fetched 90s 6d and brown at 86s. These prices for small consignments are excellent, seeing that the *average* for Arabian, realizing from 94s to 110s, at the same sale, was only 99s. Besides, small consignments of any product generally go "for a song." When Liberian coffee growing was first attempted, much was said about the markets for it. It will only sell at New York and low continental markets &c. That was fourteen years ago. It is important to note the colour of the coffee that fetched most. Bluish-grey and pale green were the tints for Arabian coffee years ago.

Cocoa has been reported as selling at 65s. for several months past, but the Ceylon mediums, though not reported, have fetched from 67s to 69s. and best qualities up to 77s. The last report states that there has been a *steady decrease* of stock. Prices will, of course, improve. It will be remembered by a few that the price of coffee rose

in '73 from R6 to R11 per bushel in the local market, notwithstanding increased shipments from Ceylon and elsewhere. In or about 1881 the price with diminished exports, decreased to R8 per bushel ! Cocoa at 50s. only in the London market won't deter those desiring a plantation, that is *never* abandoned or renewed "for nearly a century" as Sir James Longden remarked when he visited certain cocoa properties with a view to giving an impetus to its cultivation. He spoke from his knowledge and experience of plantations in Trinidad as well as in Jamaica. J. D.

VARIOUS PLANTING NOTES.

VARIOUS OILS.—Elsewhere we quote extracts from the semi-annual report of Schimmel & Co., Fritzche Bros. of Leipsig and New York regarding the market for cinnamon and citronella oils of which a very hopeful account is given.

COFFEE IN MEXICO.—What a former Ceylon Planter has to say about the prospects of coffee-growing in Mexico will be found quoted elsewhere. He speaks particularly of two districts capable of being converted into most successful plantations.

PETROLEUM AS A FUEL.—An interesting article on this subject is quoted in another column. It contains the views of Mr. B. Nelson Boyd, M.I.C.E., who expresses the opinion that the general adoption of petroleum as a fuel is a matter for the very distant future.

THE SHEVAROY PLANTERS' ASSOCIATION.—We (*Madras Mail*) publish in the annual Report of the Shevaroy Planters' Association. It is stated that there is a scarcity of labour on the plantations on these hills, but considering how favourably they are situated in regard to the railway, no difficulty ought to be experienced in getting as many coolies as are wanted if only planters would combine and organise.

LADIES AND TEA have become inseparably associated, thanks to those charming afternoon gatherings with which everybody is familiar. There is a new guise in which the association appears, to which a correspondent directs our attention :—

"There is in London a firm of lady tea merchants who have an estate in Ceylon, and who employ members of their own sex exclusively as tasters, blenders, packers and agents."

SALE OF AN ESTATE IN THE KELANI VALLEY.—Mr. J. M. Brace has purchased from Mr. C. S. Warren, Mapitagama estate, Ruanwella, the price paid for the estate, which is one of the best small covers of tea in the K. V., being R57,500. The estate consist of 148½ acres, of which 100 acres are planted in tea.—*Cor.*

A QUININE FACTORY IN LONDON.—A new quinine factory has been established in England—at Stamford Hill. in the North of London. It contains brand-new machinery of the latest description, and has no connection with any previous English manufacturer of quinine. Its institution caused quite stir among the London druggists, and is expected to effect prices greatly. [A full report is given elsewhere.—ED. *C. O.*]

COLOMBO TEA MARKET AND THE CESS TAX.—Mr. Arthur Lampard certainly gives us a thoroughly original suggestion for the disposal of the Tea Cess in his letter elsewhere : —distribute it among producers supporting the local market ! There is more in Mr. Lampard's letter than appears at first sight. Colombo will never be a great tea-market until it is better supported and freed from absurd Customs shackles, and the more tea sold here, the sooner will we drive China's and Japan's out of America, Russia, and Australia.

SALE OF LAND AT BATTICALOA.—We hear that some Dikoya planters are going to bid for the lands, suitable for coconut cultivation, to be put up on the 19th instant, at the Batticaloa kachcheri, and that prices are likely to go high. This interest of Europeans in coconut cultivation is a good sign, especially whed it leads to fresh land being opened up.

SIR JOHN MUIR'S MOVEMENTS.—Mr. W. Milne from the Sylhet Company's Travancore property, met Sir John Muir at Madras as arranged, but the latter decided to go on with his family to Calcutta, and returned in February to visit Travancore. The weather will then be less rainy, and the surveying and other work more advanced. Mr. Milne came down to Colombo, where he is now. He leaves for South India for good next week.

THE QUININE FACTORY which has just been opened at Stamford Hill is the subject of an article which we quote in another column from the *Chemist and Druggist* dealing with the effect which its existence is likely to have upon the market-position of the drug. Our contemporary does not think that the effect will be at all serious.

CARDAMOM CULTIVATION IN BANGALORE.—We understand that the reports of the Deputy Commissioner of Hassan and Kadur have been forwarded to the Superintendent of Mysore Revenue Survey on the subject of the reduction of assessments on estates cultivated with cardamoms in exposed situations of excessive rainfall with certain instructions for reclassifying and reassessing all such estates in the situations unfit for coffee owing to either excessive rainfall or exposure, with a request that definite proposals may be submitted so as to enable the Government to sanction the revised settlement being brought into effect during the current year.—*Daily Post.*

GROWTH OF TREES.—The following interesting results of experiments relating to the growth of trees at different times of the day have been sent to us by Mr. E. H. Thompson, the Government entomologist of Tasmania. Measurements were taken as far as possible every three hours, with the following results: —From 6 a.m. to 9 a.m., 8⅔ per cent. of growth ; from 9 a.m. to noon, 1⅓ per cent. of growth ; from noon to 3 p.m., no growth ; from 3 p.m. to 6 p.m., no growth ; from 6 p.m. to 9 p.m., 1⅓ per cent. of growth; from 9 p.m. to 12 p.m., 3⅞ per cent. of growth ; from 12 p.m. to 6 a.m., 85 per cent. of growth. The greatest growths in twenty-four hours were banksia rose, 6½ inches ; geranium, 5¾ inches ; wattle, 4⅓ inches ; apple, 2¼ inches ; pear, 1⅓ inch.—*Public Opinion.*

THE CEYLON COOLIE.—An experienced planter in Ceylon, writing to a local paper on the much vexed labour question, thus sums up Ramasamy : "Monthly, or even weekly payments will not keep Ramasamy out of debt. The greater his indebtedness, the more important a person he considers himself. Where he paid every Saturday, the whole in most cases would go on Sunday, and, after tho manner of the English miner, he would live on credit till the next pay day." And perhaps Ramasamy is not altogether wrong, for there can be little doubt that the money lending Chetty takes a lively and continuous interest in the coolie who is ever on his books, and out of whom he makes a steady income, and the Chetty is an influential man.—*Pioneer.*

SCIENTIFIC ENQUIRY INTO TEA CULTIVATION.—Elsewhere we quote from the *Indian Planters' Gazette* the full text of correspondence between the Secretary of the Indian Tea Association and the Government of India on this important subject. It is pleaded that as Government had rendered assistance in investigations connected with silk it might similarly give support to an industry of such magnitude and importance as tea by equipping a laboratory for the use of a chemist of established reputation who should be engaged for a period of five years' say.

Correspondence

To the Editor.

VINE-GROWING NEAR COLOMBO.

Lenawatte, Padukka, 22nd Nov.

SIR,—I see in the *Observer* of the 20th instant that something is said about my vine-growing experiment; if you can spare a little more space of your valuable columns I would like to add something on my own a ccount.

A vine requires four years before coming to its regular stage of bearing. Out of ninety two-year old plants, though a good few had been in blossom twenty days after being planted at the School of Agriculture, about fifteen bore fruit; I do not give much importance to this crop, as I must take into consideration the substances contained in the plants, and absorbed during their two years' origination in the other grape-producing country; but as one with a little experience in this culture, I must say, that the change of soil, climate and abnormal moisture to which these plants have undergone, have in no way affected their natural course of growth. Neither the quantity of fruit, would have been larger, nor the quality better, if left where originated "Gardo Blanco," the only two-year old vines I have, and the one that has been bringing this little fruit, is a Muscat. Anybody who knows this variety of grape, cannot say much about the appearance of its clusters and berries, but certainly must speak the highest about its flavour. The grape I had the satisfaction to taste from the School of Agriculture's Vineyard is just as good in appearance, and as delicious in taste as the Muscat grown in any other part of the world (the hot-house grape of Britain included). I have asked Mr. Drieberg to let you be persuaded of these facts by providing you with a specimen.

I have been pruning the vines at their very first signs of wintering so as to bring their next bearing, if any at all, in dry season. Mr. Drieberg, to whom we must be thankful if these experiments will prove successful, will carefully watch and keep me informed with all stages of growth in the plants. The pruning being done, our next attention will have to be paid to the "disbudding" a very important operation in order to secure healthy crop. I hope in a few more months to add some good and positive news *re* this experiment, while I remain, sir, yours faithfully,

C. ZENETTI

PATENT TEA-PACKING.

Rambukana, Dec. 1.

DEAR SIR,—A contemporary of yours a few days ago mentioned that Mr. P. M. Short of Dimbula had commented very favourably on a patent tea-packing paper brought out by Mr. Anderson. Perhaps you have also seen the paper and will be able to tell, after comparing it with the sample sent, made for me by a large manufacturing firm in England, which is the better. I have not seen Mr. Anderson's paper but from a description given of it I think mine would be more serviceable. I shall be glad to give any further information and samples to anyone caring to try the paper. In the meantime I may state it is easily glued together, is perfectly air and water tight, is much stronger and lighter than lead and only *one-third* the price.—Yours truly,

F. C. THEOBALD.

[Is Mr. Theobald sure there is no infringement of patent? The packing sent to us seems very serviceable.—ED. *T.A.*]

"TEA-MAKING A LOST ART."

DEAR SIR,—Under the above heading you print a letter in the *Observer* of Dec. 7, which consists, I take it, of an attack by a Planter upon Colombo Brokers, and as I represent neither of these interests I may possibly be better able to reply to it. The letter is a little rambling, but on dissection I imagine there are the following questions requiring a reply:—

The reason for Brokers' adverse comments upon the make of tea.

The reason for Brokers' adverse comments upon the liquor of tea.

The reason of the decline in price, and the policy of encouraging local sales.

The remark in the letter under review attributing to Brokers' ulterior motives in making their reports is one I regret was not expunged from an anonymously written letter prior to publication*, as I feel sure it is perfectly unjustified and has no foundation in fact, and I am endeavouring to reply to this letter, only because many planters may be interested in this subject, which otherwise I would not attempt to do, for the benefit of up-country. Regarding the make of teas sold in the Colombo Market, I consider that speaking generally the Brokers are studying the planting interest in its truest sense in pointing out what is an admitted fact as regards the great bulk of the tea; and as one who has spent a good many years in the London market, I can state that in regard to this, the teas sold here are more roughly and coarsely made than Indians, Chinas or even Javas; and as this defect is a great handicap in Colonial and Foreign markets, comments drawing planters' attention to it can only be good in the interests of the industry. The reason for brokers' adverse comments upon liquor is because it is a fact, but the marked falling-off in this particular is a thing which the recent heavy rains are accountable for, and therefore beyond all human control. In common tea I admit the decline in prices; but it is owing to the fact that the whole of India's increased output consists of this grade of tea—which competes with low grown Ceylons—the two being practically an interchangeable article—buyers taking whichever appears the cheaper. The market in London for such grades of rough-leafed, sweet-liquoring teas is from 4½ to 5½d with a sick feeling and a tendency to lower rates.

Regarding good, well-made, teas, with Ceylon flavor, the market locally for these grades, of which far too few are sold in Colombo, has been an extremely good one during August, September, October; teas with stand-out point were realizing locally at least 1½d per lb. above London prices. The difference between this market and London is not now so marked, but is still in favour of Colombo.

* The remark was as follows:—

"Nobody is taken in with it, except that the credit and motives of those who indulge in it are questioned. Selling brokers in Colombo are also buying brokers; and when a systematic attempt is made to call down the teas at local sail, the suspicion arises that there is something behind all this. If the market is bad and the teas fair, why not say his?—But in these days it is only the teas that are bad, and are steadily getting worse."

Now, in our opinion it is far better in the interests of Brokers and all concerned that such talk or suspicions as the above, should come out in black and white and be answered, than that they should become the common talk in upcountry bungalows without the chance of the other side being heard. Had we suppressed the sentence, what would "Upcountry" and his fellow-planters infer? Why that the Press had joined in a conspiracy of silence with their Colombo neighbours.—ED. *T.A.*

Regarding the policy of encouraging local sales, I think the planting interest as a whole, by the efforts they have made and are still making, realize the importance of opening up fresh markets to deal with the increased supply the island will be producing in the near future, and thus prevent prices declining to an unremunerative point. I claim to be in a position to give an opinion upon this point, the result of personal experience, and I am convinced there is one way and one way only of doing this and that is by making Colombo a real representative market where colonial and foreign buyers may feel assured of having their orders properly executed. No real expanse may be looked for in the foreign development, however much money the Planters' Association may spend, until this is done; for buyers abroad will not realize the advantage of buying Ceylon tea in London, plus 1¼d per lb. Freight, Dock and landing charges when they can import direct and satisfactorily both China and Japan teas, without any such import. I trust I may be forgiven for saying that I feel sure, the wiser method of employing the Cess-tax would be to distribute it amongst planters selling locally; for, in this way it would do some good and planters sharing it, would, in addition, obtain, year in and year out distinctly better prices than London rates and do more than anything yet done to open up the World's Market for Ceylon Tea.—Yours faithfully,

ARTHUR LAMPARD.

THE LOST ART OF TEA MAKING; A REPLY TO "UPCOUNTRY."

December 8th, 1895.

SIR,—In reply to Upcountry, who by-the-bye might have given us his name, it would be interesting to read some of the reports of "A Lost Art" that he has in his possession. As regards tea-tasting, I maintain we never had better men in Colombo than at present. I don't allude only to Brokers, but to the Trade generally. "Upcountry" is quite wrong when he asserts that "since the home markets got weak" the Colombo Brokers have developed "a keenness of vision" etc., etc. Local teas and reports are based on local prices and demand, and have now-a-days, very little to do with the home market. If a man requires a report for London he gets it and to the best of our ability; but it is no more possible for the local Broker to value, not report, teas sold five weeks hence in London than it would be for the London Broker to value, say, for Australia or Russia. It *can* only be done approximately, and quite near enough for advances against shipment. Certain marks, both here and in London, have their *own* supporters and will always upset any calculations as to value. My experience of late has been that the teas, both high and low grown, are in many instances quite as good, and some better and the market only *not the teas*, must be blamed for results. Another point I should like to draw attention to, "Upcountry" says "Selling Brokers in Colombo are also buying Brokers." Well, of course they are. God help them if they were not, at times, but so are *all the leading selling Brokers in the Lane* from the king (W. J. & Hy. T.) downwards. Surely a man must be very dense if he does not see or understand the "*pull*" his teas get, protected by good orders. His Brokers will always "find out" his own teas first and fill up his orders from his own catalogue where suitable, and failing that he goes on to his brother Brokers and there will always be far less "taken out." There is no "blue funk" about. Only since August, with the advent of one or two new buyers, some tall orders from places outside the "little village," and a low exchange local prices have been about 1d-2d over London, and now when orders are filled for the *moment* and buyers are thrown back on home rates, the usual wail comes and Brokers are told they don't know *their* business !!!—Yours truly,

A. H. THOMPSON.

THE LOST ART—"TEA MAKING;" AND THE WORK OF BROKERS.

SIR,—When teas deteriorate, *some one* must be blamed, and 'Upcountry' vents his rage on the Colombo Broker—the man whose personal interest it is to keep prices up, to keep the market up and to satisfy as far as he is able his constituent, the seller.

He infers that we, tea-tasters, report on an invoice as inferior to the previous one in make, liquor &c., when we find the market is weak. This of course he says in ignorance, but as every tea-taster who has had a practical education in Mincing Lane, knows as a rule *prices fall when teas deteriorate.*

For instance a buyer purchases a tea this week at a certain price and in a fortnight's time the same estate's tea is offered which he tastes with a view to "following" his previous purchase. He finds it 1d per lb. inferior, and what does he do? He either leaves it alone or bids 1d less than the price he paid before. The Planter who has made the tea, possibly thinks the invoice equal to the last and assures his agent that it cannot be worse, because he has not altered his manufacture in any respect, forgetting perhaps a change in the weather and ignoring the various, though perhaps trivial matters which cause differences in quality and character of teas, and which the "all-seeing" eye can and does detect, but which slight though important change may not be apparent to an unprofessional taster. But no! —it is the Colombo Broker's fault! The climate, the tea, the Superintendent are in no way to blame!!

If your correspondent will look at the local tea circulars published in August last, he will find such remarks as these "the quality of teas generally shows improvement;" "a large proportion of good teas were offered" &c; and in many tea reports he will find the same. But to say now that the invoices offered last week were generally better than those sold 5 weeks ago would be incorrect and misleading, though doubtless it would please the eye of illused "Up-country." His unprovoked assault on the commercial morality of Colombo brokers is unworthy of a reply. The auctions are public, and every one interested, can see and judge for himself if he suspects his teas are 'called down" or that they do not receive fair and open competition.—Yours truly,

TEA-TASTER.

[Teas made after pruning and during very wet weather must necessarily be inferior.—ED. *T.A.*]

DOMINICA AS A FIELD FOR CAPITAL.

The Grove, 9th Dec.

DEAR SIR,—Referring to Mr. Philip Templer's letter about Dominica as a field for Ceylon Planters I now enclose a cutting from the *Financial News* of 25th September last [quoted on page 464.—ED. *T.A.*] forwarded to me by my Agents

Messrs. Harvey Bros. on the same subject. The computation "that 20 hands will be sufficient to *work* a cacao plantation of 300 acres in full bearing, including picking and curing crop" written by Mr. Morris, certainly beats our experience. The hands must be either of very different activity, energy and skill from those of the Tamil labourer; or the mode of upkeep and cultivation must be materially different. It would be instructive to know more about this. Perhaps the weeding in Dominica is like the weeding of native coconut plantations in Ceylon and a saving is effected in that way.

The average yield also of from 80 to 100 pods per tree is a crop that we may well be satisfied with—if with such little cultivation such a crop can be got—and there can be no great reason for clean weeding if the saving is in the weeding. Your correspondent may I dare say be willing to obtain for us this information from the West Indies. Or Mr. Templer may most likely be glad to show us Ceylon men more economical modes of cultivation.—Yours truly,

JAS. H. BARBER.

VARIOUS PLANTING NOTES.

PROPOSED FORMATION OF A COMPANY IN COLOMBO TO PURCHASE COCONUT ESTATES.—We learn that a Company is in course of formation amongst some Europeans in Ceylon to purchase a group of coconut estates in various districts, and that a well-known broker is negotiating the sale on behalf of the owners of the properties. We stated a few days ago that a Syndicate was being formed in England with a large capital to purchase coconut estates in Ceylon. The properties were appraised, but negotiations have been going on for the last four months or so without any practical result, and the matter is still pending. In the meantime, we understand that one or two Colombo firms, in conjunction with up-country planters, have resolved to start a Company and buy up the same properties. The capital to be raised is, we understand, a very large one, but, as the properties are expected to yield very remunerative returns, it is expected that the shares will all be taken up readily.

ADVERTISING CEYLON TEA IN CANADA.—We have to acknowledge receipt from Mr. A. Melville White of a copy of the *Canadian Grocer*, a journal which, in point of excellence in artistic advertising, would be hard to beat. In its columns a large measure of space is devoted to advertising Ceylon tea, and we are sure no better medium could have been selected for bringing it under the notice of the trade. The advertisements themselves are smart, and cleverly got up. An article in the paper deals with the "Buying, Handling and Selling of Teas" by Mr. W. J. Forman, Ingersoll; and in it much valuable information is given to retailers as regards sampling, blending, advertising, &c. And then again the *Canadian Grocer* gives prominence to "W. M'K's" article, "The Marvellous Vicissitudes of an Island" which has appeared in our columns. Mr. White also sends us a number of cuttings from American and Canadian papers containing advertisements, paragraphs and articles regarding our staple product. It is of interest to note from these that the Salvation Army have vigorously taken up the work of pushing Indian and Ceylon tea. They have issued handbills in their own characteristic style narrating the advantages of the article and assuring customers that "every cent of profit is devoted to extending the spiritual work of the army." A good stroke of business which Messrs. M'Kenzie and Blechynden have accomplished has been to secure the right of advertising on the margin of the Salvation Army's note paper. In this connection it is stated by Mr. M'Kenzie that the Salvation Army's is the third largest mail that comes into New York. This should be a valuable adjunct to the work of advertising. From the papers which Mr. White has been good enough to send us we are pleased to observe that the campaign is being carried on vigorously.

THE GLENCOE ESTATES COMPANY, LIMITED.—This Company, with a nominal capital of R500,000, has been formed to take over Mr. John Clark's properties, Glencoe estate in Maskeliya, and Woodland estate in Lower Dikoya. Glencoe is well-known, and consists of 202 acres, of which 200 acres are in tea in full bearing; and Woodlands is also a good property, consisting of 110 acres of tea and 10 acres of tea and cinchona. The estates were valued at R220,000 and a purchase price has been fixed at R180,000, half of this being taken in shares, and half in cash, Mr. Clark continuing in charge. The Company is practically a private one, and the capital now to be issued, viz., R180,000, in R100 shares, has been subscribed, although applications are still coming in. The estimated return on the capital is 14 per cent. The first directors are Messrs. G F Traill, F R Williams (of Minna estate, Maskeliya), and E Booth, Mr. Clark joining the board after allotment. The agents and secretaries are Messrs. Bosanquet & Co. —*Local Times.*

PAPER MILLS IN INDIA:—From a Blue Book recently issued we take the following:—

There are nine paper mills—four in the Bombay Presidency, three in Bengal, one at Lucknow, and one at Gwalior. Another is under construction in Bengal. Of the nine, three are private concerns in the Bombay presidency, one of which has not been at work for many years. The others have an aggregate nominal capital of Rx. 492,200. The fibrous materials used for making paper are chiefly rags, babui and moonj grasses, straw, jute and hemp cuttings, and old jute bags and cloth. The quality of the papers made has much improved in recent years, and they have a large and increasing sale. Most of the white and blue foolscap and much of the blotting paper, note paper, and envelopes, used in the Government offices, is now obtained from the Indian mills. The total quantity of paper made in 1893 was about 29½ million lb. The number of persons employed is 3,157. There are a number of small paper works, for the manufacture of what is known as country paper, scattered through most provinces, but of these petty industries no statistical information is available.

"A STRONG MARKET FOR COCONUT OIL"—is the subject of an article in *the Oil Paint and Drug Reporter* dealing with the completion of a transaction in New York involving the sale of 500 tons of Ceylon oil which had formed the unsold portion of the stock of a local dealer who had made an assignment some months previously. It is explained that though the oil had not actually been retired as a competing factor in the market, it had passed into very strong hands and it was conceded that there was no probability of any of it finding its way into consumptive or other channels except at full and inflexible prices. The effect of the announcement of this deal was to immediately cause an advance on both varieties of oil, and the feeling of confidence which has thus been inspired is intensified by the knowledge that the supplies yet to be forwarded this year from the primary markets are comparatively light. Of Ceylon oil the next shipment is 550 tons expected in New York in the beginning of December. It is stated that the demand for coconut oil is slowly improving despite the fact that very many of the heaviest consumers are carrying rather full supplies.

INDIAN GOVERNMENT CINCHONA PLANTATIONS.—From the Revised Estimate for 1895-96 we notice (says the *Madras Mail*) that the Government Cinchona Plantations will show a profit on the current year's working of R17,700, receipts being set down at one lakh and expenditure at R82,300. It is possible that when the accounts for the year are made up, the profits will be even larger, owing to the constant daily increasing demand for quinine and febrifuge. The Budget Estimate for 1896-97 provides for a profit of over R12,500, that is if the sales continue stationary. In view of this considerable profit, Government should at once reconsider its decision to plant up new acreage. These increased sales of quinine are satisfactory, but if they go on and Government runs its factory on commercial principles, it must expect to hear shortly from the trade on the subject.

FRUIT-GROWING IN AMERICA.—Some idea may be gained of the scale on which fruit-farming is carried on in America—says the London *Echo*—from the operations of one establishment alone, the Hale Orchard Company, which, in 1891, planted 100,000 Peach trees in Georgia:—

During April and May this year 50 men were occupied all day in removing excess fruits in order to allow the rest to have room to develop. They began to come to maturity in June, and from the 20th of that month 350 men, aided by 50 mules, were engaged every day gathering and carting away, filling 4,000 baskets in the 24 hours. Imperfect, bruised and scratched fruits, separated from that in prime condition, amounted to 300 bushels a day. It took from 525 to 600 baskets to fill a railway refrigerator van, and each van load represented a value, including coast of gathering, packing, and transport of £100. From this single orchard 80 van-loads were sent away this year. In Houston County the cultivation of the Peach alone gives employment to 3,000 people.

COCONUT PLANTING IN FIJI.—The Editor of the *Fiji Times* is a strong believer in the coconut palm and urges his depressed fellow-colonists as follows:—

To owners, who possess land lying idle, situated other than on Viti Levu, where from some unexplainable cause the coconut does not thrive to the samo degree as in other islands of the group, we would suggest the planting of such lands with coconuts. As they stand at present they are comparatively valueless, but once planted with the coconut palm, from the mere fact of their being so planted, their increment for the succeeding ten years at least would be an increasing one year by year, and so by some such practical means our waste lands would regain their wonted value once again, and with something on boot. Once in full bearing the produce from an acre of coconuts should be worth two pounds sterling, plus 10s for reducing the nuts into copra. At this estimate it will readily be seen, at a five per cent interest on capital—the days of 10 per cent have gone for ever—the value of an acre of coconuts would be worth about thirty pounds. As a warranty for so planting we have only to turn to Ceylon, where, for the past two years, quite a revival in coconut planting has set in, and is being pushed ahead with some vigor. We would like to see our unoccupied lands which are suitable for the production of the palm, put to a like use, and the ordinance lately passed to facilitate contracts being entered into between Europeans and natives will largely assist to this end, as no European oversight will be necessary, beyond what is specified in the contract. The native, at any rate will now be capable of planting and tending the nut for the first year or so, after which it may be left to take care of itself, and the owner of so much planted land will know that his possessions are increasing in value, for while he is sleeping his nuts will be growing. We hope, therefore, that some attention will be given to this suggestion by a large number of owners and agents of unproductive areas.

"THE LOST ART: TEAMAKING".—As we expected, "Upcountry" has drawn forth a prompt reply, and he as well as others of the planters will be pleased to see such recognised authorities as Mr. A. H. Thompson (Broker) and Mr. Lampard (Buyer) giving the needful explanations called for by that letter. Now, in the face of such answering letters as we publish, it will surely be admitted that we acted very wisely in allowing "Upcountry" to have his growl (even including his insinuations) fully out. Far better that any uncomfortable feelings or suspicions entertained in upcountry factories should be brought into the light of day, and so be met, and dispelled, rather than that they should be denied publication, and so allowed to pass from one district to another and gather more and more force as they became common talk. Mr. Lampard must remember that many planters lead a lonely life, they cannot meet on 'change, or find a businessman among their accessible neighbours to explain Colombo matters that they do not understand, and therefore we feel a certain latitude should wisely be allowed, when those competent to clear away unfounded suspicions are available. So again, in respect of "anonymous letters." Many Estate Managers do not feel at li erty to sign their names without the permission of absent proprietors, and yet it is often in the interests of such that they feel bound to criticize Colombo businessmen. It is now for "Upcountry" to say how far he is satisfied with the letters of Messrs. Thompson and Lampard and whether he thinks any further explanations necessary? To our mind, the information given is satisfactory, if not conclusive.

VEGETABLE PRODUCTS IN PORTO RICO.—Besides sugar and coffee, both of which are intimately associated with Porto Rico, tobacco also holds an important position, but though already cultivated to a very large extent, it is stated that its growth might be extended almost indefinitely if it were not for the old question of excessive taxation. The soil is of the very best for tobacco growing, and quite equal to the best of the Cuban plantations, but as a rule, there is some carelessness in the process of curing. Good tobacco requires no great labour in its cultivation, but considerable care and attention, especially as regards insect pests, and when the leaf is stripped, selected and dried. In all these matters the native of Porto Rico is exceedingly careless, and this it is that prevents so good a final product being obtained as in Havana. Still, a considerable quantity of Porto Rico cigars find their way to the States, Spain, France, and England; but the tobacco trade is one which ought to be largely extended, if only proper facilities were given by the Government. Large quantities of tobacco-leaf are exported to Cuba, to be made up there into the world-famed Havana cigars. On the subject of fruits, it is said that, though the plantain, banana, &c., are grown everywhere, and are much used as fruit in the country, the export trade is not large nor yet of the pine-apple, which grows to perfection when any care is taken of it. It is remarkable that the pine-apple is not exported in larger quantities than is actually the case, seeing that it is a fruit that could easily be shipped and carried the short distance to the United States, where it can command good prices. The coconut grows in immense quantities all around the coasts of the island, and to a considerable distance inland, but little or no use is made of it, and exports are few and far between. The contents of the green nut are much used as a beverage, but the great bulk of the crop, which has a continuous growth, is allowed to go to waste. The mango, covered with its green and golden fruit, is common everywhere, and lines the roadsides in many parts for miles and miles. The Seville, or Bitter orange, grows wild in the woods, but none of the fruit is exported, and by far the greater part goes to absolute waste.—*The Gardeners' Chronicle.*

THE "AGRICULTURAL GAZETTE" of New South Wales, Published by the Department of Agriculture. Volume VI. Part 10. October, 1895. Contents:—Stinworth (*Inula graveolens*, Desf.) J. H. Maiden; The Weeds of New South Wales (Supplementary Notes, No. 1) J. H. Maiden; Botanical Notes—Mr. Charles Ledger of Cinchona and Alpaca fame, Note on Sassafras timber in the Bega District, Beech or White Beech, Additional notes on Colonial or Moreton Bay Pine, J. H. Maiden; The Cause of Gumming in Sugar-cane, N. A. Cobb; The Phylloxera in Europe.—Annual Report of the Chief Andres Blavia, of the Central Government Station of Viticulture in Spain, at Cette, Translated by H. Cambridge; Beekeeping.—Chapter II: The inmates and econmy of the Hive, the Drone, Albert Gale; The Dairy Industry in Denmark, F. E. H. W. Krichauff; The Devon Breed of Cattle, J. L. Thomson; Chemical Notes, Beeswax, Testing Babcock's Flasks, Fowl Manure, Notices of some recent Text-books, F. B. Guthrie; Ticks on Cattle; Poultry Notes.—Cramming Fowls, Freezing Poultry for Export, S. Gray; Practical Vegetable and Flower Growing, Directions for the month of November; Orchard Notes for November; General Notes—A new Fruit-dryer, Remedy for Potato Scab; Agricultural Societies' Shows, 1895-6.

POISONOUS EFFECTS OF BORAX.—The extensive use of compounds containing borax, which under various names are sold for preseving foods, lends a special interest to some observations of Dr. Ch. Féré of Paris, who has used borax in the treatment of intractable cases of epilepsy, and with success in certain cases. It is true that for this purpose it was necessary to give large doses for long periods, but in the course of the trial he met with a considerable number of persons who were peculiarly susceptiblo to borax. In them, loss of appetite was succeeded by burning pain in the pit of the stomach, dryness of the mouth, and eventually by nausea and vomiting. Borax produces also a remarkable dryness of the skin, which is found to favour, if not to cause, various skin diseases, especially eczema. The hair also becomes dry and may fall out, causing complete baldness. The most dangerous result of the use of borax, however, is its power of producing kidney disease, or of converting a slight disorder of the kidneys into a fatal malady —*British Medical Journal.*

COFFEE, COTTON AND A SPECIES OF "TEA" IN SOUTHERN ABYSSINIA.—The following extracts from an official Report are of general interest—more especially that part which indicates the existence of a shrub in Abyssinia which serves the people as a substitute for "tea" and is similar to the matè of Brazil and Paraguay:—

"But few people are more desirous or more capable of trading than the natives of Africa; and the facility with which factories can be formed is sufficiently proved by the reception heretofore experienced in various parts of the continent. Abundance of land now unoccupied could be purchased or, rented at a mere nominal rate, in positions where the permanent residence of the white man would be hailed with universal joy, as contributing to the repose of tribes long harassed and persecuted. The serf would seek honest employment in the field, and the chiefs of slave-dealing states, gladly entering into any arrangement for the introduction of wealth and finery, would, after the establishment of agriculture, no longer find their interest in the flood of human victims, which is now annually poured through the Highlands of Abyssinia. No quarter of the globe abounds to a greater extent in vegetable and mineral productions than tropical Africa; and in the populous, fertile, and salubrious portions lying immediately north of the equator, the very highest capabilities are presented for the employment of capital, and the development of British industry. Cotton of a quality unrivalled in the whole world is everywhere a weed, and might be cultivated to any requisite extent. The coffee which is sold in Arabia as the produce of Mocha is chiefly of wild African growth; and that species of the tea-plant which is used by the lower orders of the Chinese flourishes so widely and with so little care, that the climate to which it is indigenous would doubtless be found well adapted for the highest-flavoured and more delicate species so prized for foreign exportation.

"Chaat is a shrub very extensively cultivated both in Shoa and in the countries adjacent. It is in general use among the inhabitants as a substitute for tea, which, in all its properties and qualities, it closely resembles. The plant is said to have been brought originally from the western mountains, of which the elevation being from five to eight thousand feet, agrees with that of the Chinese tea districts, whilst the average temperature does not exceed 60° Fahrenheit. In a light gravelly soil it attains the height of twelve feet; and the leaves being plucked during the dry season, and well dried in the sun, fetch from one penny to two-pence the pound. They are either chewed or boiled in milk, or infused in water; and by the addition of honey a pleasant beverage is produced, which, being bitter and stimulative, dispels sleep if used to excess. The virtues of the chaat are equally to be appreciated with those of the yerba mate, recently introduced into England from Brazil and Paraguay."

THE NEW CURE FOR SNAKE-BITE.—In our recent article we showed that the world really owed this suggestion, amongst so many other boons, to the great Frenchman, Pasteur. Since then, an article contributed by Profs. Geddes and Thompson to the *Contemporary* confirms this, in these words: "to the Chemist he has given a new theory of fermentation; to the physician many a suggestive lesson in the etiology of diseases; and a series of bold experiments in preventive and curative inoculation, of which Roux's treatment of diphtheria, and Prof. Frazer's new remedy for snake-bites, are examples at present before the public; to the surgeon a stable foundation, as Lister acknowledged, for antiseptic treatment." But besides its greatest men, the world contains many quiet, and sometimes obscure, workers, who often contribute very important help and make valuable original suggestions towards the elucidation of great discoveries. Apparently we have such an one (though by no means an "obscure" worker) in "DINSHAH ARDESHIR TALEYASKHAN," (who is "assisted by the Medical Staff of the Maharaja of Baroda") and who in January 1891 published a "Note on the probable discovery of snake-bite and cholera cure," which had a limited circulation in "Europe and America only." "At that time", he says, the task of discovering effective remedies was all but hopeless, and desparcd of." D. A. T. in November 1895, publishes another "Note" in which he says: "To Prof. Frazer of Edinburgh, and Dr. Hafkeine of Paris is now due the whole credit of ransacking on the lines laid down in the Note of 1891." ANTIVVENINE is the name given by Dr. Frazer to his snake-bite cure. We have not space to go into details, but having read D. A. T.'s Note of 1891 we think the claim he makes in his Note of 1895 not without some justification. But in these matters the man who by his labour and science demonstrates the proof is always the true discoverer.

TURPENTINE.

Capital lying idle in India for want of investments that will yield something less exiguous than the rate of interest on Government Paper, need not go far in search of employment. To judge from the account given by the Conservator of the School Circle of the United Provinces, the manufacture of terpentine is an industry which promises to pay well those who engage in it. The operations carried on at the Forest School for the distillation of the product from the fine resin collected in the Jaunsar forests have proved that the industry can be made profitable. At present of course, it is carried on departmentally under conditions that keep it, for all practical purposes, in an experimental stage. But in the large towns of the submontane tracks there is a market for a much larger quantity of turpentine than the Forest School can supply. It is therefore reasonable to suppose that, if private enterprise were to take up the manufacture energetically, it would find its reward. No limit need be assigned to the area of operations, and the Kumaon forests may just as well be tapped for the resin of the conifers as those of Jaunsar. The matter is, we think, worth the attention of those who seek new openings for the employment of their capital.—*Indian Agriculturist.*

DOMINICA AS A FIELD FOR CAPITAL.

It has for some time past been apparent that the West Indies must rely less on the old staple industry of sugar planting, and turn their attention more to the cultivation of the many and valuable fruits and vegetable products for which their situation and climate render them so eminently suitable. In no island can the experiment be made with a greater chance of success than Dominica, and few islands have a finer prospect before them. Trinidad and Jamaica are first in the field; but, in proportion to her acreage, Sunday Island should soon assume a high rank in the vanguard of the movement. The necessity for new capital is now recognised by those who have visited the islands, and already syndicates and companies are being projected which promise to return to their promoters and shareholders a high return. Dominica is 29 miles long by 16 miles broad, and has an area of 291 square miles, or 186,000 acres, of which about 20,000 acres only are under cultivation. In the official catalogue of the Colonial and Indian Exhibition of 1886 the following account of the Island of Dominica is interesting and important: "Its mountains are next in height to those of Jamaica; but right away to the top they are densely clothed with foliage. From peak to shore the island is a mass of virgin soil and an unopened forest, while from the heights can be seen sparkling streams and brooks which appear as fresh as those of Yorkshire. The finest lime groves in the West Indies may even now"—that is nearly ten years ago—"be seen there. A certain amount of cacao is already established. Of fruit in all kinds there is plenty. No place in the West Indies is better adopted for cacao or for fruit of all kinds. Cinchona will flourish there as well as in Jamica. In short, whatever can be grown in the tropics will grow in Dominica." No island has such capacities for irrigation; nowhere can water-power be obtained so easily. The rivers and streams, which never run dry, number nearly 30: and, as the coast line does not exceed 90 miles, three rivers in every mile pour down past the estates to the sea. There is excellent steamship communication, not only between the islands themselves, but America, Canada, and the United Kingdom, and the trading world generally. There is an abundant rainfall, averaging about 82 in. per annum, The mean temperature is about 79 deg. Fahr.; the maximum 83 deg. 93 min. and the minimum 74 deg. 83 min.; so in respect to climate Dominica is vastly superior to Trinidad and other islands. The severe droughts of 1869 and 1873 in Trinidad were fatal to the lime trees throughout that island.

The most important of the vegetable products of Dominica are, no doubt, cacao and limes. Mr. Morris, in his work on "Cacao; How to Grow and How to Cure it," says that "a good cacao tree, in good soil, yields from 50 to several hundred pods per annum. The average for well-cultivated trees at seven years old should be between 80 and 100 pods per annum. As it generally takes about 11 pods to yield 1 lb. of cured cacao, the above would indicate that a good mature cacao tree, under favourable circumstances, might yield, on an average not less than 7 lb. of cured cacao. The average yield per tree at all stages on an estate of, say, 300 acres would probably not exceed some 2 lb. or 3 lb. per tree, or, taking 230 trees per acre, a return of 4 cwt. to 6 cwt. of cured cacao per acre. Under ordinary circumstances the actual working expences on an estate in Trinidad are estimated at about 16s per cwt. At the sixth and on to the ninth year cacao trees should be in fair bearing, but they seldom reach their prime before their twelfth or fifteenth year, after this period, where the trees have been carefully established and well cultivated, a cacao estate is a comparatively permanent investment, and it may be expected to continue in bearing and yield remunerative returns for some fifty, eighty, or one hundred years. It is computed that 20 hands will be sufficient to work a cacao plantation of 300 acres in full bearing, including picking and curing crop.' Land in Trinidad planted with a cacao fetches £50 and upwards per acre. The cost in Dominica of lands in forest is 10s. to £1 per acre, and under certain conditions the Government gives free grants. The following statement will give a idea of the expenses and profits connected with cacao planting in Dominica for the first six years. Afterwards, as we have already stated, the estates will yield far larger and heavier profits:—

100 acres of forest land to fell, clear, plant cacao; houses for manager, labourers, &c., stock, &c., complete, £20 per acre to sixth year	£2,000
Interest on £2,000 at five per cent for six years	600
Contigencies (say)	400
	£3,000
Returns, sixth year—	
5 cwt. per acre at 60s=£15	£1,500
Working expenses, at 25s per cwt. ...	625
	£875

Another industry which promises well is the growth of limes and the manufacture of lime juice. There is no difficulty in the cultivation of the lime; indeed, as soon as it has begun to yield it looks after itself. The fruit is crushed by the same machinery employed to crush the sugar cane, and the juice is distilled by mechanical process. It is then boiled and run off into barrels to cool, when it is ready for exportation and sale. It is estimated that a lime estate should yield a profit of about £10 an acre. All the world knows of the lime juice of Montserrat, an island about one degree north of Dominica; but the climate and rainfall of the latter are even more suitable to the cultivation of the lime than Montserrat itself. Cacao and limes would doubtless, be the chief staple of a Dominica estate; but there is also a successful future open to the cultivator of oranges and bananas. The working expenses of an orange plantation are almost nominal. Prune the rotten branches, thin the fruit in its early stage, and manure the trees occasionally, and you have done all. The great germ of success in orange culture in Dominica lies in the fact that the fruit ripens some two months before the Florida crop; latter, moreover, is subject to severe and disastrous frosts. It is a fact that Florida orange-growers go to Dominica in the early fall to buy such oranges as they can obtain, to sell in the States prior to the ripening of their own crops. A crop of 1,000 orange trees should after the eighth year realise a net profit of not less than 10s per tree, or £500 a year. Dominica oranges have been sold in London this last winter at 2s a dozen. In November and December England and Scotland have no oranges, except some immature fruit from Spain and the States. Florida oranges ripen earlier, and so, at present, meet with no competition for practically two months. The

oranges which ripen in Dominica in September should supply this competition. The banana is another product which has money in it. The tree is raised rom a suck er, and fifteen months after planting produces its first bunch of fruit. It is also useful in acting as a shade tree for the young cacao plant; but it will grow in any out-of-the-way part of the estate. Mr. Morris refers also to this plant in his work on cacao, and shows to what proportions the trade in this and other fruit has reached in Jamaica. The annual profits on banana cultivation are estimated, he says, at £15 per acre, but as much as £20 or £30 per acre are realised in suitable districts. The banana is a perishable fruit, and requires a rapid transit to foreign markets; but it appears from a pamphlet published in 1890 by Dr. Nicholls that the Government of Dominica has made arrangements with the Quebec Steamship Company for making Dominica the last port of call on the line from the West Indies to New York. Dominica thus appears eminently suited to take a decided lead in the new commercial activity which will undoubtedly, in a few years, prevail throughout our West Indian possessions. If once she can show how to respond to an inflow of home capital there will be no lack of money forthcoming, and though the old West Indian nabob can never be resuscitated, and it is hardly expedient that he should be there is no reason why these new and valuable industries should not bring in their wake a fresh era of prosperity to the islands and a race of moderately wealthy and comfortable planters.—*Financial News.*

DRUG REPORT.

(From *Chemist and Druggist.*)

London, November 21st.

CAFFEINE.—Steady. The general quotation is 19s per lb., but for 100-lb lots 18s, it is said, would be accepted. It is very doubtful, however, whether the last-named figure applies to "spot" stuff. For December-January 18s is quoted.

QUININE—There has been no business of any importance this week. Second-hand German bulk quinine offers at 1s 1½d per oz.

ESSENTIAL OILS—Lemongrass Oil is firmly held at 2s per oz on the spot. Oil of citronella is again dearer, 1s 5d per lb having been paid on the spot for tin oil, and holders being now disposed to ask 1s 6d for that variety. The last business for shipment was at the rate of 1s 4d per lb c i f, and it is believed there are now buyers at 1s 5d per lb for drums, but no sellers.

TEA IN MAURITIUS: GOOD NEWS FOR TEA PLANTERS.

There is nothing like living under a good maternal Government, for the enjoyment of protection to industry and encouragement in production. The Tea Farm having proved a great success, and tea cultivation being likely to prove a source of profit to the country, it was not to be expected that the Financial Authorities would miss an opportunity to fritter away a little public money, and prove to the World at large, and to such of our planters in paticular who have been unwise enough to invest their money in Tea Planting, how good and patriotic a thing it is, to endeavour to increase the resources of the Colony by any new enterprize. Open competition, no doubt, like open confession, is good for the soul, and is the very breath of Trade, and when Government happens to be one of the competitors, and, with the true instincts of maternity, chooses to supply the naughty little heathen Chinese, who won't buy nasty rum, with nice tea at a good deal below cost price, it is a capital thing for the Colony and of course helps out the Auditor General in the budget which we are given to understand he is preparing.

Mr. Mayer, Government Vendue Master, has, we are informed, sold today by public auction, by instructions from the Storekeeper General, about 2000 lb. of the Farm Tea at 0.80 per lb. We hope that the public will appreciate the fact, and be duly grateful to a Government which provides them with the cup which cheers but not inebriates, at such a moderate price, and at a sacrifice of so little common sense. If they get the benefits—for it is rumoured that the whole lot found a ready purchaser in an astute 'revendedor' who finds no difficulty in passing it on at R1.50. The Farm Committee are naturally delighted—some are asleep—the Chairman is on a journey, and as when they are asked for their opinion, and give it, it is naturally never taken, they have ceased to be a necessary factor in the matter at all.

There will soon be another sale, and it is to be hoped that the price realized will encourage an export trade.—*Merchants and Planters' Gazette*, Nov. 6.

BOILER INSPECTION IN CEYLON: AN EXPERT'S VIEWS.

Connected with the controversy on the inspection of machinery and closely allied to it is a point, which, in our opinion, has been to some extent overlooked, viz:—the inspection of steam boilers. Speakers at the recent Chamber of Commerce meeting and elsewhere have shown that, beyond the danger inherent in the case of all machinery in motion and which no legislation can avert, in tea factories, the safety of those employed is in no way jeopardised. But in the case of steam boilers lies a source of danger, in the generality of cases, unapparent to those in charge and which under unskilled direction might be the cause of a terrible disaster. With a view of determining how far this danger exists our representative considered the best means of throwing light on the subject was to call on Mr. Lamont of Messrs. Walker and Co., than whom, probably, no one in the island is better qualified to express an opinion. Mr. Lamont very courteously expressed his willingness to submit to the process of being interviewed.

A FACTORY ACT SUPERFLUOUS.

You want to know what I think of the Ordinance for the inspection of machinery? he said. Well in my opinion a Factory Act for Ceylon is quite unnecessary.

In the case of tea factories only?

No, I should say all round.

What about textile factories and other places in which women and children may be employed?

We have only one textile factory and in it, so far as I am aware, there has not been a single accident. We have several coconut desiccating mills but, as I have never been inside, I am unable to say what arrangements are made for fencing machinery. In tea factories least of all, do I consider there is any necessity for Government interference. Tea-making machinery, generally speaking, involves a minimum of danger to the persons employed. They may become careless, indeed they do, often laying aside the brush which is supplied for sweeping in the leaves and using their hands. The loss of a finger or a hand may be the result. Such accidents, however, must be of comparatively infrequent occurrence, as one never hears of them. No legislation can put a stop to that. I don't see what further precautions you can take than to fence machinery in tea factories.

BOILER INSPECTION: LEGISLATION NECESSARY.

But what I want chiefly to know is—what about the steam boilers in use in tea factories?

Ah! that is a different matter. I am strongly of opinion that we should have an Ordinance rendering the inspection of boilers compulsory. All boilers, in my opinion, ought to be inspected at least once a year, either by a properly qualified inspector or by some other competent person.

You consider that the policy of *laissez faire* is conducive to danger?

Yes, I do. While I cannot recall any serious accident. I have seen boilers which *ought to have burst.* Why they did not I don't know. These I may say were in European hands.

Is there any particular type of boiler in use in tea factories, and is that particular type adapted for running for a considerable period without an overhaul?

The boiler most in use is of the locomotive type, ranging on an average from 12 to 14 nominal horse-power. With that particular type of boiler little inspection is required but, to my mind, that is an argument in favour of compulsory inspection. In this country the water used is comparatively free from lime and consequently the formation of "scale" is less than in other countries. Steam boilers, so far as tea factories are concerned, date only some ten years back. As time goes on these boilers will suffer from wear and tear and the danger will become greater. There is a strong temptation, especially when a boiler is in native hands, of putting off repairs and it is in all such cases that an Ordinance is required. In many tea factories the working of engines and boilers devolves on natives, and the Superintendent or the S. D. may supervise but, from the very nature of their training, they cannot be expected to detect any flaw which might arise.

A SYSTEM OF INSPECTION.

But is there no system of periodical inspection at present such as is carried out by the boiler insurance companies at home?

Oh yes. Some Companies employ a competent European engineer who is well qualified to inspect the boiler under his charge. This firm undertakes the work of boiler inspection. Once a quarter an inspector makes a round of estates in the Kelani Valley and inspects the boilers in use, for which a certain fee is charged. There is his book and here is an entry —— Estate "safety valve leaking slightly; otherwise, boiler in good order; engine not so clean as it might be." a copy of the report is sent to the Superintendent and if a third copy is required for the proprietor it can also be had. Superintendents can thus keep the men in charg up to the mark, and the responsibility of having repairs done lies with them. Our Kandy firm do similar work Upcountry, and so, I understand, do Messrs. Brown & Co. of Hatton and other firms.

Then is this sort of inspection at all general?

Yes, I should say that most of the estates upcountry are visited by engineers.

WHERE THE DANGER LIES.

Then why render compulsory what is already done voluntarily?

For those who do not have their boilers inspected. It is in these cases that the danger lies.

In what manner would you propose to legislate?

I would render it compulsory to have all boilers inspected at least once a year, either by a Government inspector or by a competent engineer. I am in favour of the latter method because it does not entail the appointment of another official and because the owners of boilers would much prefer an engineer of their own choosing to come about their premises rather than a Government official. This would cause no hardship or inconvenience because, as I have said, most of them are in possession of certificates of efficiency for their boilers. To such as were in possession of these certificate a license might be given by Government. However, as regards the licensing of boilers that is a matter of opinion. I do think all the same that the certificate of a competent engineer whether official or unofficial, should be insisted on by Ordinance.

"A COMPETENT ENGINEER."

In the case of an unofficial inspector how would you define a "competent engineer."

By a "competent engineer" I mean a person who has served an apprenticeship to engineering and holds a responsible position in an engineering firm.

Is once a year often enough to inspect a boiler?

I think it is. Of course, once in six months would be more likely to ensure absolute safety but it might be a cause of complaint, as an inspection would entail cessation of work. I may mention that under Lloyd's Rules a steamship's boilers are inspected once in four years only. Yes, once a year is quite often enough.

One more question. How will the new Ordinance affect your firm?

Not very much. An inspector coming poking about might bother us a little, but if he did come, though I say it myself, he could not show us very much that required to be done.—Good Morning.

TEA LEAD PAPER.

With reference to the enquiry by a correspondent the other day in regard to Tea Lead Paper we wrote to Mr. T. C. Anderson, Gartmore for the favour of his opinion. Mr. Anderson has been good enough to reply sending us also another sample for comparison, and from his letter we quote as follows:—

"My opinion is unfavourable. I and others have tried it, (or similar paper, a sample of which I send you) and the report from the Lane was that the teas had gone off, and this within two months. My patent lead paper is infinitely superior and has the following advantages as stated in the specification. It strengthens the lead and makes it more air-tight, thus enabling thinner and cheaper lead to be used, and the paper being *inside*, it prevents the contact of the tea with the lead, which is injurious to the tea. The only disadvantage it has, is that it is slightly dearer, but against this is the fact that the teas are better preserved. I have shipped teas to South Africa in this lead, and in the usual lead packets, and the former is preferred, and to South America. I use no other. The Colombo Commercial Company imported a consignment on trial some years ago, but it had been packed in London in a damp condition and the lot was unsaleable.

VARIOUS PLANTING NOTES.

THE NAHAVILLA ESTATES COMPANY.—The Report of this Company for the past year will be found in another column. It shows that a good deal of progress has been made both in tea and coffee cultivation, and that while the profit for the past year has been such as to permit of a dividend at the rate of 20 per cent—32½ per cent was the exact return; the prospects for the ensuing year are also very satisfactory. We congratulate the shareholders,—especially Mr. R. P. Macfarlane (who is erelong to take a well-earned holiday)—upon this fortunate state of matters and trust that the Company may long continue to be prosperous.

"DOMINICA AS A FIELD FOR CAPITAL."—We direct attention to the article on this subject which we quote elsewhere from the *Financial News* and to Mr. J. H. Barber's letter in criticism thereof. Both will be read with a good deal of interest here, and we trust that we may hear more on the subject from either Dr. Morris, or Dr. Trimen who is at present in England.

DIMBULA FELIX AND ITS TEA.

Dimbula Felix is unquestionably a prince amongst Tea districts: much more so than ever it could have been in Coffee.

After passing along the damp valley of Ambegambuwa and through the dismal dripping tunnel, the prospect on emerging, is very cheering. At first the estates retain just a little taint of the mouldiness we had been passing through; but presto! all is changed, and by the time we skirt Chrystlers Farm we breathe a more stimulating air. The patriarch, alas! has gone since we last visited the locality; but his handy-work remains, and no planter ever did his work more neatly and methodically. Albeit, John Martin did not for years believe in tea. Compared with coffee, he said it was "—— rubbish!" And he was not alone in this opinion; nearly all the crack planters said the same if less forcibly. Old R.B.T. often declared that "tea planting was only fit for creatures in comboys." Yet, here we are, in the midst of a general prosperity which the coffee era never brought us; for, it was only in exceptional cases that coffee paid the poor proprietors:—not altogether the fault of the coffee, much less that of the planter—but there was always too great a leakage in coffee,—too much Agency. What a change now in Colombo! Twenty years ago when a planter went to see his agent he approached the great man's office hat in hand. Now forsooth, he throws himself into a lounger at his hotel and sends a message for the fellow to come to him!

Dimbula is seen at her best as we approach the heart of the district. The broad belt of land stretching due South-west from the Great Western towards Adam's Peak is probably the pleasantest planting ground in the island, the soil so uniformly good, or fairly good, the climate so mild and even,—that any novice might plant with success and live as long and healthy a life as he could anywhere in the tropical world.

One is glad to observe a marked improvement in the general appearance of estates during the past two years. It is a relief to find that the experimental stage is past, and that the cultivation and preparation of the leaf has now been reduced to an approved system. No longer do we hear wild guesses at 600 to 1,000 lb. per acre; they are content to estimate an average return of 400 lb. No longer do we, here and there, see the unfortunate tree cut down to within an inch or two of the ground, the leafless stubble struggling between life and death. A more natural and rational system of pruning has been uniformly adopted. The cultivation and manufacture of tea has, in short, been fully grasped and without any reasonable doubt the industry has come to stay in Dimbula Felix.

Exotic Trees.

Nor is the general improvement confined to the tea plants: the beautiful belts of exotic trees interspersed throughout the district not only give a pleasanter aspect to the landscape, but they afford the tea a better chance of escaping blight than ever poor coffee had. It is all very well in temperate or cold latitudes to plant up wide expanses with the same product; but, in the tropics, plants are not so sociable and the greater the mixture the more natural and healthy is the vegetation. And yet some discrimination is necessary; for, all trees are not friendly to the tea plant, which after all must be our chief consideration. Many of the *Acacias* for instance are poison to tea; the *Sapu* is a sworn enemy—while the *Bamboo* is a beast that will tolerate nothing else to feed in its neighbourhood. Cinchona, like coffee, is a dead horse, and its place is well filled by more beautiful if less profitable substitutes, among which *Grevillea* is the chief favourite, so much so that it too threatens to be over-done; but I am glad to see many others cropping up. The rapid-growing *Eucalypti* adorn many a swamp and odd corner; but for rapid growth, shelter and harmless shade the *Aalbizzia* is the best I have seen,—the timber not so useful as that of the *Inga*; but the tree is more kindly to the products growing under it. Of all the recent introductions, however, commend me to the *Bucklandia** a large leaved variety of poplar habit, well-suited for wind belts—and being closely allied to the *Liquidambar* of Formosa—chiefly used for making tea chests, the wood will doubtless one day come in useful.

Government Reserves not Required.

With such a beautifully mixed cultivation it may well be asked what earthly necessity is there for large Government reserves?. Let every estate proprietor be bound to cultivate, say 50 forest trees per acre, and dispense with the foresters and their antiquated notions regarding the cause of rainfall and water supply. The classic grounds of Abbotsford are a case in point, an example of what may be done by a mixed cultivation. Twenty-five years ago, men laughed at the seemingly haphazard way in which trees all and sundry were pitchforked into this property; but see them now, after judicious thinning out, and you will laugh with the other side of the mouth.

There is only one thing that cannot now be helped in Dimbula, and that is a considerable proportion of poor jât. What a contrast some of the fields show in this respect? And it is curious to note how much there seems to be after all in sheer luck. It isn't foresight, it isn't brains. "Brains," said the late James S. Martin, "are often a positive encumbrance to a planter," a crumb of comfort of which I was forcibly reminded in crossing a certain boundary the other day. On the one side the pure and beautiful broad and tender-leafed *manupuri*. On the other a nondescript jât with little leathery leaves.

Yet to think of the owners of these two adjoining properties a dozen years ago! The one with a gigantic intellect and with unique means of gaining information and supplies of every green thing obtainable. With the other, alas! nature had been very niggardly. Yet, look at the tea he planted. By mere good luck he simply stumbled upon the very finest jât, and now the estate he left is worth £20 an acre more than some of the neighbouring properties. Planters of the present day have indeed an immense advantage over their predecessors; profiting as they do by past experience. Yes, it was worth waiting. The advantage of good jât being now so palpable that it would be culpable folly to plant inferior stuff. The real difficulty is now however, where to plant. This reserve policy of a demented Government is really an outrage on common sense without a particle of reasonable argument in its favour while the loss to the Colony is incalculable. Again, I say, look at the mixed cultivation on these beautiful highland estates. Could any forester suggest a better cover?

There are few prettier rural scenes in the Highlands of Ceylon than can be seen from the verandah of Abbotsford bungalow, a picture so often and so beautifully painted by an Old Master, that he would be a bold amateur who would now touch it, and I only approach the subject to record how much the near prospect has improved by the rapid growth of the many ornamental trees, particularly the *Corypha Australis* which thrives so much better here than in its own native land. I cannot however refrain from bewailing one little bit of vandalism by a neighbouring proprietor who has planted up portions of the pretty patana—Mount Pisgah to wit—in stiffly

* We (Ed.) quote as follows from the "Treasury of Botany":—"Bucklandia. The name of a genus belonging to the order of Witch Hazels, having stamens and pistils in the same flower, or in different flowers on the same plant; or some plants have stamens only, while others have only pistils. The calyx is almost bell-shaped, adherent below to the seed-vessel; the anthers are supported on awl-shaped filaments. The flowers are in head-like groups, each subdivision of which consists of eight flowers. The name *Bucklandia*, which has also been employed to designate certain fossil species of plants, was given in honour of the late Dr. Buckland, well known as a geologist. The only species is an Indian tree with the general aspect of a poplar; its leaves are alternate, stalked, and variable in outline. [G. D.]"

straight lines, *a dreadful eye-sore.* Why could he not have been content or induced, to follow nature in graceful curves, instead of that sickening irritating bee-line which disfigures the scene,—enough of itself to disturb the peaceful slumbers of him who so often and so fondly looked upon this prospect.

THE NAHAVILLA ESTATES COMPANY, LIMITED.

A meeting of the Nahavilla Estates Co., Ld., was held at the office of the Agents—Messrs. Geo. Steuart & Co., at 3 o'clock on 14th Dec. There were present:—Messrs. E S Grigson, Chairman, and A Orchard, Directors; Messrs. J Paterson, J Anderson, J Abel, J F Headrick, and Gordon Pyper; and *by proxy* Mrs. Catharine Margary, Messrs. T S Grigson, W Anderson and J L Gordon, Mrs H H Grigson, Messrs. Chas. Gordon, R C Wright, A F Souter, R J Drummond and R P MacFarlane.

The Report of the Directors dated 5th December was taken as read and unanimously adopted.

The following proposals were carried unanimously:—

1.—"That a final dividend at the rate of 10 per cent for the last half-year, making 20 per cent for the year, be paid forthwith."

2.—"That Mr. R. C. Wright of Deaculla, Haputale, be elected Director in place of Mr. R. P. MacFarlane who retires by rotation."

3.—"That Mr. John Guthrie be appointed Auditor for the year ending 30th September, 1896, on a remuneration of R100."

The CHAIRMAN then made some remarks on the position of the Company and the results of the year's working, which, he thought, might be regarded as highly satisfactory. The recent acquisition of Mahapalagalla was alluded to, and the Directors hoped that it would prove a satisfactory addition to the other properties of the Company.

The following is the

ANNUAL REPORT.

The Directors have the pleasure to submit their Second Annual Report together with a Statement of Accounts for the year ended 30th September, 1895

The accounts shew that a sum of R44,619·26 has been expended on the purchase of sundry allotments of land, in building and equipping the Factory on Ury with machinery, in planting and cultivating the area not in bearing, and this amount has been added to the cost of landed property.

The Directors therefore deemed it advisable to call up the remainder of the Capital to recoup the expenditure (*vide* Circular of 10th October, last).

The profits for the year including a small balance of R201·57 brought forward from last year, and after paying preliminary expenses in connection with the purchase of Ury Estate have been R67,515·94, equal to a return of about 32½ per cent. on the paid-up Capital of the Company.

An interim dividend for the half year of 10 per cent was paid, absorbing the sum of R20,800, and the Directors recommended the balance (R46,715·94) being disposed of as follows:—

	R	c.
Final Dividend for the Season of 10 per cent, making 20 per cent in all -	20,800	00
Directors' Fees - - -	1,500	00
Secretariat and Office Rent - -	1,000	00
Reserve - - -	23,415	94
	46,715	94

During the year under review about 160 acres of new land have been acquired in the neighbourhood of Ury, 100 acres of which are now being planted with tea; and on Nahavilla further 23 acres of coffee land have been brought under this cultivation.

The definition of the two estates as at present constituted is as follows:—

Tea in full bearing	175	181
,, ,, partial ,, ...	66	—
,, not in ,, (includes land in course of planting) ..	93	127
Coffee	120	117
Forest	44	66
Cinchona, Patna, Scrub, Chena, &c.	103	158
Total ..	601	652 acres.

The Factory on Ury is in working order, and the prices realized for the teas have so far been satisfactory.

The coffee crops secured for the year exceeded expectations very considerably, and although prospects for 1895-96 do not point to so large a return from this source, still there is a fair crop on the tress, which together with the proceeds from the tea, should enable the Directors to present a fairly satisfactory report again next year.

The Directors have just concluded the purchase of Mahapahagalla Estate for the Company at a cost of £7,000, the acreage of which is as follows:—

Tea in full bearing	170
,, not in ,, ...	47
Coffee	35
Patna, Forest and Fuel trees ..	71
Total ..	323 acres

Mr. R. P. Macfarlane retires by rotation from the Board of Directors, and as he is shortly proceeding to England, it will be necessary to elect another qualified shareholder in his place.

NEW TEA COMPANIES.

THE VOGAN TEA COMPANY OF CEYLON, LIMITED.

The memorandum and articles of Association of "The Vogan Tea Company of Ceylon, Limited," are published in the *Gazette*. The main objects for which the Company is established are:—To purchase or otherwise acquire the Vogan and Iddagodde estates in Kalutara, and the Stamford Hills, and Barkindale estates in Dikoya; to prepare, manufacture, treat, and make marketable, tea, and (or) other crops or produce, and to sell, ship, and dispose of such tea crops and produce, either raw or manufactured, at such times and places, and in such manner as shall be deemed xpedient. The nominal capital of the Company is one million rupees, divided into ten thousand shares of one hundred rupees each (of which seventy-two thousand rupees are now called up), with power to increase or reduce the capital. The following have signed the memorandum:—W W Mitchell, M Finlay, C S V Morrison, F Liesching, V A Julius, W Moir, and Henry Bois.

THE KANDYAN HILLS COMPANY, LIMITED.

The memorandum and articles of Association of "The Kandyan Hills Company, Limited," are published in the last *Gazette*. Among the objects for which the Company has been established is:—To acquire the Pansalatenne estate, situated in the Matale district, or cultivate tea, and (or) any other products or trees, plants, or crops which may hereafter be approved, and either on the said estates or elsewhere within or beyond the limits of Ceylon, and to prepare, manufacture, treat, or make marketable the produce of any such farming or cultivation, or any like produce, and to sell, ship, and dispose of such produce, either raw or manufactured, at such times and places and in such manner as shall be deemed expedient. The capital of this Company is R300,000, divided into three thousand shares of R100 each, with power to increase or reduce the capital. The following have signed the memorandum and articles:—George J Jameson, Flowerdew Macindoe, E R Waldock, Frank Duplock, E Benham, John Wilson, and F Liesching.

THE VALUE OF TEA PLANTATIONS AND FORESTLAND

ought to rise still further if it be correct that the responsible head of a Planting Firm, whom we welcome back to the island, has been stating that, in his opinion, first-class forestland at a high elevation suitable for tea is worth £35 sterling per acre, and that he is prepared to buy at that rate. And yet with the standard of value already set for tea estate property in Upper Dimbula, the Agras, in Udapussellawa and around Nuwara Eliya, of £70 sterling and upwards per acre, who dare say that half that amount is too much for first-class forestland?

In any case, it seems to us that it behoves the Ceylon Government to take advantage of the present full tide of prosperity to have a certain proportion of its waste land between Dimbula and Haputale utilised for cultivation. It is perfectly absurd to have a first-class line of railway running for twenty miles through country that as yet does not yield a single ton of traffic! Over four millions of rupees may be said to be spent on the line between the last tea-field in Dimbula and the first encountered in Uva; and are we to be told that no traffic is to be drawn from the scores if not hundreds of square miles of Crown lands at present lying unutilised in this region? The idea is indefensible; and so is the old-fashioned notion that it is necessary to leave these higher forests untouched on account of rainfall or for the protection of the head-springs of our rivers. Let the Government enforce rules to conserve forest on each side of streams as they please; but far better in these days when the value of quick-growing timber and fuel trees is so fully realised, to lay down regulations for the planting up of a certain area in each lot sold with exotic trees which, indeed, would be done in any case for the shelter and benefit of the tea. There are besides, patana lands near Ambewella and below Horton Plains admirably adapted for tea; and much of the Ohcoya Valley ought to be utilised, to the benefit of the Railway, of the General Revenue and for the General Prosperity of the Colony.

BEAUMONT TEA COMPANY OF CEYLON.

An extraordinary meeting of the shareholders of the Beaumont Tea Company of Ceylon, Ltd., was held in the offices of the Secretaries and Agents—the Eastern Estates and Produce Company Limited., on Dec. 16th. Mr. F. H. Wiggin presided, and there were present: Messrs. D. Michie, F. Liesching, F. S. Rashleigh, B. G. L. Bremner, and (by proxy) Mr. John Guthrie.

The CHAIRMAN explained that the meeting had been called:—

1. To consider the advisability of purchasing additional estates and allotments of land.

2. To confirm such purchases as shall have been made by the Directors.

3. To consider and pass (if approved) the following resolutions or either of them (namely):—

(1) That the capital of the Company be increased by creating 5,000 new shares of R100 each and that the Directors be empowered to issue and allot the same, or any of them, in such manner, and at such time, or times, as they may think expedient, and at any premium, and generally on such terms and conditions in all respects as the Directors may determine.

(2) That the Directors be authorised to borrow money for the Company on mortgage debentures, and to that end to issue debenture bonds bearing interest at 6 per cent per annum for such amounts as may be required for the purpose of the Company, but not exceeding in the aggregate at any time half the then issued capital of the Company.

4. To transact any other business that may be brought before the meeting.

The CHAIRMAN explained that the power to purchase additional estates and allotments of land was practically already conferred by the Articles of Association, but they wished to put the matter beyond all doubt.

Mr. RASHLEIGH moved and Mr. BREMNER seconded the adoption of the motion.—Agreed.

The CHAIRMAN stated that the Directors, exercising what they believed to be their powers, had arranged to purchase Delta Estate at a price which he had every reason to think would prove a satisfactory bargain for the Company. He therefore moved that the arrangement for the purchase of Delta estate be confirmed.—Agreed.

On the motion of Mr. RASHLEIGH seconded by Mr. BREMNER the other resolutions before the meeting were passed and that without comment.

Mr. RASHLEIGH asked whether, for the information of the shareholders, the price and other arrangements connected with the purchase of Delta Estate should not be made public.

The CHAIRMAN considered such a course inadvisable and intimated that a valuation of the estate can be seen by the shareholders at the office of the Company.

The proceedings then terminated with a vote of thanks to the Chairman.

COCONUT PLANTING AT MIRIGAMA: A MODEL PLANTATION: No. II.

We have too long delayed to dispose of our further reference to the model coconut plantation of the Mirigama district, if not of the whole island. We have mentioned the exceptionally good soil and favourable undulating lay of land on which Mr. Wright had to work. Everything in these respects, was just what an experienced coconut planter would desire to have, and in the matter of ready access and easy means of communication, Kandangomuwa was also desirable; while the surrounding Sinhalese villagers soon prized the regular employment and prompt payment for work afforded them on the new estate. But all these advantages of soil, situation and command of labour would have been of little avail, if the utmost pains had not been taken in the selection of seed nuts, and in the various operations for nursery, holing, planting and care of the young plants. As to nuts, Mr. Wright proposed to pay a specially increased price in order to be sure of the very best possible article. He was allowed to select his own trees on various estates—famous for their fine nuts—and to put a mark on the same to shew that the coming crop was ot be harvested for him, of course, paying in proportion for the privilege. The largest and ripest of nuts were thus secured, and none was passed for the nursery without such testing as eye, ear and hands could afford. We need not enter into the further planting operations, but may hasten on to the present condition of the property after six and seven years of growth has covered the soil with an umbrageous grove of palms, at the rate of only 66 tree to the acre—so giving an unusual area to each; and yet their branches already nearly meet over the intervals. The absolutely methodical, systematic style of management is shewn by the whole estate being marked off in different blocks, each of which is indicated by a small wooden sign board painted white with the number of tree-

in black figures—so that at a glance the Superintendent can see how far his weeding, clearing, manuring or harvesting work has progressed, as he walks or rides over the property. This is quite an original idea of Mr. Wright's, adopted so far as we know on no other property, and yet it has been admired for its usefulness and simplicity by all old planters who have visited Kandangomuwa. In the centre of his property, on a commanding position, Mr. Wright has erected a commodious bungalow and all the needful offices and stores; while all who know of his past career as a successful amateur Horticulturist, may be sure that he has not forgotten his cunning or tastes over the garden. Such splendid, well-cultivated as well as carefully selected mangosteens and other foreign fruit trees are nowhere else to be seen in the island—he has Singapore mangosteens, blood oranges from Aden, durians, chestnuts, Brazilian nuts, rambutans, and mangoes, &c. Mr. Wright's latest hobby—for he cannot possibly be idle in this direction—is Orchids, of which he has a delightful collection including some very beautiful specimens.

Mr. Wright is a great believer in manuring coconuts; and we feel sure that he is ready to subscribe to the opinion of that other veteran, Mr. W. B. Lamont, that no man ever spent up to a rupee per tree per annum in manuring his coco-palms, without pocketing 100 per cent on his outlay. The use of a stock of cattle is not neglected on Kandangomuwa; but Mr. Wright has more faith in sheep manure; and he began by introducing a valuable breed from Australia—a ram and three ewes about six years ago, and now he has raised a flock of close on a hundred sheep, a cross with native ewes; while he is determined to get the number up to 1,000 of a flock before he considers his property properly stocked. This is a new departure in stock-breeding of the utmost importance to the Colony at large, and for which Mr. Wright deserves very great credit and official thanks.

Mr. Wright is also a believer in the Veyangoda Coconut Desiccating Mills. He and other neighbouring proprietors are entirely satisfied with the liberal way in which their crops are purchased at this establishment. So far, it has been the day of comparatively small things with Kandagomuwa in its crops of nuts, rising from 1,784 nuts in 1889 to close on 40,000 this year. But, henceforward, the return going on at a geometrical ratio may be expected very soon to reach eight-hundred-thousand nuts. So mote it be—with a continuance for a century of cropping at the same rate to the benefit of Mr. Wright, his children and grand-children.

A few lines of "Reminiscences" of early years, will conclude our notice of Mr. Wright's work.

PLANTING AND PRODUCE.

THE FEAR OF OVER PRODUCTION.—If the tea planting industry is overdone it will not be because of the absence of warning on the subject. At home and on the spot tea growers are told that if they will persist in increasing the outturn they must look out for all kinds of trouble in the future. The temptation just now is very great no doubt to "open out" in tea, and there is every chance that the temptation will not be resisted while the demand is brisk. That the friendly warnings issued for some time past will, as in the case of warnings generally, be utterly neglected we do not doubt, but it is the duty of all well regulated minds to persist in uttering them all the same. We notice that a Calcutta prophet says that ere long we—the planters—"shall have to face hard times." Well, we imagine that is precisely what will happen unless there is moderation in the outturn. New markets are very important, but they are necessary to relieve the British market of some of the present supply. Unless people discover some new virtue in tea the demand after all is limited.

THE NEW MARKETS.—There is no doubt that the demand for Indian and Ceylon tea is increasing outside the United Kingdom. Australia is steadily adding to the quantity annually consumed, and appears to be following the example of the United Kingdom in the gradual displacement of China tea by Indian and Ceylon. In Russia the use of Ceylon tea has lately received considerable impetus, and that market is now a very important outlet. South Africa, however, should not be overlooked, as recent advices from Cape Town state that the quantity of China teas shipped to Natal, although tea planting is carried on to a small extent there, has lately been on an increased scale.

A TEA GARDEN DISPUTE.—It is not often that a dispute about an Assam tea garden is heard in the Law Courts at home. In the Queen's Bench Division last week, Mr. Justice Mathew, sitting to try commercial cases, had before him the case of MacLaughlin v. Bardley, which was an action brought by Dr. A. J. MacLaughlin to recover a balance on account of the purchase of a plantation in Assam from Mr. William Mackenzie Bardley, of The Elms, Exmouth. Dr. Blake Odgers, Q.C. (with him Mr. Rose Innes), in opening the case, explained the purchase was admitted, defendant having from time to time made payments on account. The action related to the purchase of an estate, and defendant agreed to pay eight rupees an acre for land suitable for planting tea and one rupee for land not suited for that purpose. The dispute was in respect of the acreage of the estate, and there was a question as to survey made at the request of the defendant in order to avoid a difficulty with the Government. The property subsequently went into the hands of a Company, of which the defendant was chairman of the directors. The plaintiff was called in support of the claim, and was cross-examined by Mr. Turton, who represented the defendant. In the course of the evidence the counsel engaged in the case saw his lordship in his private room. On their return into Court Dr. Odgers asked his lordship to give judgment for plaintiff for £300 and costs, the settlement to cover and include all matters in dispute, and to be a final discharge of the settlement. Mr. Turton thanked his lordship for his interposition, and said it should be clearly understood that the settlement included all matters of difference arising out of this transaction. His lordship agreed, and gave judgment accordingly.

FACTS AND FIGURES.—*Financial News*, as will be seen from the following extract, throws doubt upon the statistics regarding the increased consumption of Indian and Ceylon tea abroad. It says: "some rather absurd statistics have got into circulation regarding the increased consumption abroad of Indian and Ceylon tea, one writer representing that up to the end of September the deliveries abroad were 35,000,000 lb., against 28,000,000 lb. for the whole of 1894. That the re-exports of Indian and Ceylon tea are growing fast is true, but these figures are far in excess of the truth. The Board of Trade returns for October show that in ten months the total re-exports of tea were 25,294,881 lb. of which three-fifths was Chinese. The re-exports of Indian tea rose from 2,832,838 lb. for ten months in 1894 to 3,192,288 lb. for the same period this year; while the increase in Ceylon tea was from 4,402,014 lb. to 6,073,288 lb. Of course, some countries take their Indian tea direct; but the London market is still the best criterion of the course of this rising trade." Messrs. Gow, Wilson, and Stanton's letter, which the *Financial News* prints today, is a complete answer to its own comments. This letter is as follows: "In your article upon the increased consumption of Indian and Ceylon tea abroad you have drawn attention to a matter which is of vital importance to the

British-grown tea industry; for it is upon the opening up of new markets for Indian and Ceylon tea that the prosperity of that industry now mainly depends. So generally is this fact admitted by the proprietors of tea estates that, in response to a petition from planters, the Ceylon Government imposed an export tax upon tea for the purpose of raising a fund to open up new markets, while Indian planters have raised a voluntary levy among themselves for the same purpose, the two funds annually reaching somewhere about £10,000. You comment upon a report having obtained circulation which erroneously states that 'up to the end of September the deliveries abroad were 35,000,000 lb, against 28,000,000 lb for the whole of 1894.' The total quantity of Indian and Ceylon tea used abroad for the first nine months of 1895 was about 27,000,000 lb., against about 20,000,000 for the same period in 1894. Of this quantity only 8,000,000 lb were re-exported from the United Kingdom in 1895, and 6,000,000 lb. during the same period in 1894, the remainder going direct from the countries of production. The total quantity of Indian and Ceylon tea used outside the United Kingdom during the whole of 1894 did amount to 28.000,000 lb., as stated in your article, and if the increase which has taken place during the first nine months of 1895 should continue in the same proportion to the end of the year the use of British-grown tea outside the United Kingdom should reach nearly 40,000,000 lb.—a quantity sufficient to materially affect the welfare of the enterprise. This matter is of such importance to one of our great national industries that we feel sure you will consent to give it publicity."—*H. & C. Mail.*

TEA DEALERS IN COUNCIL

The annual meeting of the London Wholesale Tea Dealers' association is always interesting to the growers and importers as a reflection of the views of the tea trade. Mr. Francis Peck presided over the meeting held last week, and the annual report was as follows: "Your Committee have delayed the issue of their report until now, as they were anxious to complete the negotiations respecting an amendment to Clause 4 of the Public Sales Conditions. These negotiations were only concluded at the end of Oct., and the clause as hereinafter referred to come into operation on the 1st. The subject of robbery of tea returns for sampling has again engaged the attention of your committee, and a special fund was raised, which assisted in the prosecution of another receiver and sampler. The case on being tried at the court resulted in conviction, the receiver being sentenced to eighteen months' imprisonment with hard labour, and the youth to three months. An account of the receipts and expenditure in connection with this fund is printed with this report, and shows a balance in hand to be used in future cases. In connection with this subject, the warehouse proprietors have a plan for abolishing the system of using returns for sampling still under their consideration, and your committee will favourably entertain any well-devised scheme which may not be opposed to the interests of wholesale dealers. A caes was reported of some tea sweepings being exported, and after being subjected to a particular treatment reimported, and, although then of an objectionable character, passed by the Customs authorities. Steps were promptly taken to effectually prevent such rubbish being used for home consumption. A further representation was made to the Customs authorities respecting tea collected in what are commonly known as damaged holes in some bonded warehouses, and an assurance was given that such tea should in future be destroyed. Complaints have been received of teas being put up for sale without any indication whether the teas were bulked here or abroad, also of the bulking operations being in some cases imperfectly performed, and steps have been taken to prevent such irregularities. A measure was drafted during the last Parliament, entitled the 'Warehousemen's Certificates Bill and as it appeared to facilitate advances upon warrants without enquiry, and thus render fraud easy, your committee considered it most objectionable, and will continue to oppose it if further steps are taken to introduce it in the House of Commons. With reference to the subject of Clause 4 Public Sale Conditions referred to in the first paragraph of this report, your committee have very carefully considered the matter, and after several interviews with the brokers' committee and the warehouse proprietors, have agreed to an amendment, which came into operation on November 1st. The original clause simply stated that the teas would be ready for delivery on the day of sale, but there was no penalty for any infringement of this undertaking, and in practice it was found that frequently delivery could not be obtained, and, moreover, that packages were often allowed to be left open for a long time, and the teas seriously affected thereby; whereas, by the amended clause, the operations to be completed on the day of sale are clearly stated, all packages nailed down within six days, and delivery given on the day after the day of sale, on a notice being given. This will not prevent any packages which are urgently required being in ordinary cases delivered on the day of sale, but, what is more important, gives the buyer the option of refusing any packages as to which the conditions have not been complied with. In some catalogues the words 'To be taken without allowance for any irregularity in quality' have been used, much against the interest of the buyer, and your committee are glad to report that upon the injustice of the condition being brought under the notice of the Brokers' Association an assurance was given that the objectionable words should be omitted in future."

The Chairman said, with regard to the amendment of Clause 4 the Public Sale Conditions, he supposed every one of them knew what an important matter that was. They had had to have a very great number of interviews with both importers and also with the brokers until they could get it satisfactorily settled. The negotiations were only concluded at the end of October, and the clause came into operation on the first of the month. He hoped it would be a great improvement on the last. Two or three members of their committee had taken a great deal of interest in that matter. As to the question of robbery of tea returns for sampling, he was afraid they had not got to the end of that yet, but at all events their action had had some effect. He did not think they would really stop it until they got a fresh system of sampling, but that at present seemed as far as ever. There was a balance of £34 on the fund raised for that prosecution. The cost did not reach the sum subscribed, and so it was decided to carry the balance to a prosecution fund in the event of a similar case being taken up. With regard to the paragraph as to the warehouse proprietors' plan for abolishing the system of using returns for sampling, the only difficulty was that the more they came to think over the different proposals the more difficult it was to arrive at any really satisfactory substitute for that which they now had. They would probably all know to what the next subject referred—that of tea sweepings being treated and re-imported. The sweepings of wharehouses, mixed with dirt and every else, were sent to Holland, ground up, and reimported as good tea. The Customs passed it—how or why he had never been able to make out. He was in correspondence with the customs personally, and so were also the committee, but someone let the teas go through—they were very white, and he supposed the people thought they were Pekoe tips. They proposed to add one paragraph to the report on a matter which had been engaging the attention of the committee as follows: "The subject of dust teas being imported in packages not canvassed or otherwise protected has been under the consideration of the committee, and they urge on importers the desirability of having such packages properly packed." He supposed everyone knew there were a considerable number of complaints in respect to dust teas, that when they arrived at their destination they were short weight. The general feeling was that both in the interests of the importers and themseves such teas should be canvassed at the

port of departure. He would move that the report be adopted.

This was seconded and the motion carried. —*H. & C. Mail.*

CINCHONA IN INDIA.

From the Revised Estimate for 1895-96 we notice that the Government Cinchona plantations will show a profit on the current year's working of R17,700, receipts being set down at one lakh and expenditure at R82,300. It is possible that when the accounts for the year are made up, the profits will be even larger, owing to the constant daily increasing demand for quinine and febrifuge. The Budget Estimate for 1896-97 provides for a profit of over R12,500, that is if the sales continue stationary. In view of this considerable profit, Government should at once reconsider its decision to plant up new acreage. These increased sales of quinine are satisfactory, but if they go on and Government runs its factory on commercial principles, it must expect to hear shortly from the trade on the subject.—*Times of India.*

TEA-GROWING AT THE CAPE.

It has been a standing anomaly for many years that England has been almost alone in appreciating the superiority of Indian and Ceylon tea to the Chinese article. Many were the attempts made to find markets in other countries, but until quite recently, it seemed as if our planters would have to be content with British custom alone. A great change, however, has latterly occurred; during the first nine months of the present year the quantity of Indian and Ceylon teas sent out of the United Kingdom exceeded by 7,000,000 lb. the amount thus exported during the whole of 1874. At the same time the United States, Australia, and even Russia have considerably increased their direct imports of the British-grown herb, and it may be pretty safely assumed that, as the knowledge of its superiority spreads in these and other countries, the demand will continuously increase. The one exception is, oddly enough, South Africa, which still remains faithful to Chinese tea. Why this should be the case among people not particularly given to sticking to ancient ways remains to be explained. But for many years the goahead Australians displayed the same strange preference, in spite of the most determined efforts to convince them that they would benefit by following the example of the mother country. Perhaps the "Capers" are merely making shift with their old source of supply until they can produce tea for themselves. It is already experimentally grown in some parts of Cape Colony, and experts predict that, before the end of the century, tea-growing will become an established and highly profitable industry in that marvellous land.—*Globe*, Nov. 20.

AGRICULTURAL COMPANY OF MAURITIUS.

The twenty-second ordinary meeting of the Agricultural Company of Mauritius, Limited, was held yesterday at Winchester House, under the presidency of Lord Stanmore. Mr. Alf. G. Dick (manager and secretary) read the notice convening the meeting.

The Chairman, in moving the adoption of the report and accounts, said that when he addressed the shareholders last year he had a very pleasing duty to perform, inasmuch as he was able to tell them that the estates had produced a net profit of over £12,000, and that the directors were prepared to pay a dividend. He was sorry to say that this year he could not do the same. Of course, in such an industry as that in which they were engaged, there must be fluctuations. Last year they considered that the hurricane of 1894 was a slight one; it had not apparently done much harm; but when the crop came to be cut it was found that it had done a great deal more harm than was supposed, and had damaged exceedingly both the quantity and quality of the canes. Then, again, there was a great amount of disease in the canes, and altogether the result was far from encouraging. Prices were bad, the produce was indifferent, and naturally the anxiety of the directors was great. Under the circumstances the directors conceived that it was their duty, while content with the management of the company's affairs in the colony, to make the strictest and closest inquiries into every detail of management on the several estates, and to exercise every economy in their power, in order to assist the recuperative process which they hoped in more favourable years to undergo. He was very glad that they did make that investigation, and that they had consequently delayed meeting the shareholders, because the result was much more satisfactory than some of them at first sight were prepared to expect. They found that their business was essentially in a sound position. They were clearing off debts running over several years, which were due to causes entirely beyond their control, and they were also largely diminishing the debenture debt, and the interest payable on account of it. There was every reason, he thought, to expect that, unless they had more bad luck than usually fell to the lot of men, they would be able next year to present a report as flourishing as the one submitted last year. He did not for a moment deny that if they were overcome by such an extraordinary concurrence of bad luck as to have hurricane upon hurricane, disease upon disease, and prices still going lower and lower, they would be in a serious position, but he did not think they had any reason to expect that such an extraordinary run of bad luck would continue. The last report received from the colony was decidedly encouraging. It was to the effect that the crop was satisfactory, and that prices had improved. Referring to the accounts, the shareholders would see that the amount of the share capital that was called up in March last was £4 a share. The calls so far had been fairly met, although not so well as the directors could have wished, and step had been taken to get in all arrears. The debenture debt had been reduced to £145,950, and since the making up of the balance-sheet to £132,630, showing a very substantial decrease as compared with last year. Altogether the liabilities had decreased by £29,460. The adverse balance carried forward was £19,900. Under the circumstances the Board had felt it their duty to exercise the strictest economy, and to reduce the expenses as far as possible without impairing efficiency. The office expenses had accordingly been reduced by 25 per cent., and the directors themselves had reduced their fees by a similar amount, although they had been reduced on a former occasion. The great reduction in the production of sugar all over the world, which amounted to something like 1,000,000 tons, must have its effect in raising the price of sugar, and he was quite satisfied that there was no occasion to think despairingly of the future of the company.

Mr. W. J. Tanner seconded the motion.

Mr. Haigh said the directors had collected from the shareholders over £80,000, and they had only reduced the debenture debt by £71,900. On the other hand the debts in Mauritius had been increased by £46,000. He complained also of the fact that the directors had paid an interim dividend although no profit had been earned. ("No, no.")

Mr. Tanner replied that the directors had only had £55,000 in the present balance-sheet with which to reduce their indebtedness, and not £80,000.

The Chairman also stated that the additional liabilities in Mauritius were incurred with the full approval and knowledge of the shareholders last year. The inquiry was instituted for the purpose of seeing whether the estates in Mauritius were likely to be worked at a profit or at a loss in the future, and, as the result had shown, the directors had every confidence that they could be worked at a profit.

The Secretary added that the company had called up altogether £90,000, including the 12s call made in June. £19,000 were outstanding, which left £71,000, and they had paid off £72,000 worth of debentures up to date.

After some further discussion, the report and accounts were adopted, and the other formal business transacted.—*Financial Times.*

COCO-NUT OR COCOA-NUT.

Once again we call special attention to the following editorial note from the *Pharmaceutical Journal* of London. We have for several years back with the concurrence and approval of the highest authority in the island (the Director of the Royal Botanic Gardens) adopted "coconut" in all our publications. Emerson Tennent, the greater Historian of Ceylon, did the same. The difficulty usually is to get people at home to aid in a change of the kind, but now that the step has been taken by so good an authority in England, we trust all writers, printers and publishers out here will follow suit and do what they can to make the convenient and indubitable form of "coconut" universal. We would especially appeal to our contemporaries, to the Department of Public Instruction (and Agriculture ?), and last not least, to the Government Printer to adopt what is so clearly and scientifically shewn to be the correct form. If we could only convince "Mincing Lane" we should like next to see "cacao" adopted for the produce as well as the tree; but this is more difficult, "cocoa" as pronounced being a universal household as well as "market" word for this food product and drink, in England. Still if "coco" is kept for the nut, there will be much less risk of "cocoa" beans, nibs, or paste being supposed to come from the palmtree. Here is the paragraph:—

"COCO-NUT OR COCOA-NUT.—A discussion as to whether this should be spelled c-o-c-o or c-o-c-o-a has recently been published. The palm yielding the coconut and the tree which furnishes the substance used as a beverage and called cocoa, are know by bontanists, and hence by pharmacists, to have no connection. Nevertheless, many persons outside that intelligent circle have an idea that both are products of the same trees, or are connected in some way, and even botanists do not agree as to the correct spelling of the word coco in coconut. The evidence on the subject is briefly this:—In early botanical works and books of travel coco-nuts are mentioned, the word "coco" being derived from an Indian word coc or cocus, used to indicate the fruit of *Cocos nucifera*, on account of a fancied resemblance of the base of the endocarp, with the three circular impressions, to the face of a monkey whose conversational powers were limited to uttering a sound like coco or cocus. According to another authority the word "coco" in Portuguese means anything which frightens children, the monkey-like expression on the endocarp being perhaps used for that purpose Linneus in forming the genus *Cocos* probably founded the name on these variarions, and how it came to be known as cocoa (c-o-c-o-a) nut is not quite clear, but there is nothing to warrant such a method of spelling. Now that the leaves of *Erythroxylon Coca* are also articles of commerce and known as coca (c-o-ca), it becomes a matter of much importance to discriminate carefully between the three substances of similar names but widely different nature."

THE LANTANA.

(Abstract of report on Forestry from the *Planters' Monthly.*)

The lantana of which mention has been made in former reports of this committee, continues to spread with vigor in almost all districts of this country; Puna, as Mr. Rycroft believes, and Kula, Maui, according to Mr. von Tempsky, being happily free from the invasion. Where it attacks cultivated ground, or intrudes into land already wooded, its lead eradication is no doubt desirable. Mr. Lowry and Messrs. Gay and Robinson, for our 1888 report, described the process adopted by them in meeting the difficulty. The young plants lightly rooted are without difficulty pulled up; the older plants are cut off near the ground, and a few drops of kerosene oil are poured on to the exposed wood of the remaining trunk, after which the roots perish. Mr. R. W. Meyer and Mr. Colville clear their arable and pasture lands of lantana twice a year. As the committee suggested in 1888, the lantana is probably not without economic use, if it can be restricted to valueless or only slightly valuable land; but this restriction is of course the difficulty which presents itself; and no remedy seems to exist except the careful clearing of young plants where they can be reached. Moreover, where alntana is not interfering with any other growth, it is as Mr. McBryde points out, providing the seeds of mischief elsewhere. This gentleman writes that some landowners do not clear their lands at all, or do it so little that it amounts to nothing, giving as reasons that the clearing would cost more than the land is worth; whilst others after constantly and diligently clearing, find themselves constantly injured by the proximity of what are in effect nurseries for propagating the plant.

Of some economic service rendered by the lantana Colonel Spalding speaks as follows, in a very interesting letter with which he has favored the committee: "I think no one will dispute the right of the lantana to be regarded as in the front rank of 'noxious plants,' and yet I am by no means sure that this interesting individual has not been maligned. Having had over 12 years' experience with the lantana on Kealia, I am not prepared to say that it has been altogether an evil. The dying out of the kukui trees, some years ago (a circumstance I cannot attribute altogether to the cattle) left our middle lands on foot hills bare and exposed. In many places the soil was soon washed from the surface, and these lands became unfit even for pasturage. The lantana came and stayed. Naturally it has been kept out of the cane fields, and only allowed to extend itself over these middle lands that had been denuded and rendered almost worthless. It has continued to grow mauka, to some extent, but our best pastures on the upper lands are comparatively free from it. Now I find that the lands where the lantana has had its home for years had gained in strength of soil, and the cattle find good grass wherever they can push through the bushes. I attribute this to the fact that the thick bushes prevent the hot rays of the sun from drying up the ground, and serve to retain the moisture which causes decomposition of fallen leaves, and vegetable matter, adding to the strength and richness of the soil. I expect to see the lantana die out in the near future, and leave these lands in much better condition than if it had never grown."

Granting that the plant in question is to a certain extent useful, it seems likely that it will establish and take care of itself where it is wanted; and too great efforts cannot be made to keep in check; for in a balance of advantages and disadvantages the latter will be found in most districts to predominate.

[The Lantana, though regarded by many in Queensland as a pest, has its friends and these are increasing. When well grown it is easily uprooted by bullock teams. Colonel Spalding's views will find many adherents in this country.—Ed. *T.A.*]

PALMETTO FIBRE.

The experiments made by Dr. Silas L. Loomis, of Fernandina, show clearly that the palmetto fibre is of great value commercially and that the plant, which not long ago was considered not only worthless, but a burden to the land, will in the future be of great importance. It will almost, if not, quite, equal cotton for varied uses and as a source of wealth. Dr. Loomis divides the possible application of the palmetto fibre into articles made of raw material and manufactured articles.

Of the raw material are the following:

1st. Roof covering and thatching for the sides of building.

2nd. Brooms such as are in use wherever the palmetto grows.

3rd. For scrubbing and other rough uses brushes are also made by binding leaves together, and are very cheap, easily made and useful

4th. Hats and Baskets.—When the young leaves of different grades of fineness are split and bleached one has an article which, when braided in different styles, can be made into hats, baskets and bonnets which vary in price from 10 cents to $3 and even $20 according to quality and decoration.

5th. Food.—The bud of cabbage palmetto from which the plant derives its common name is edible both raw and cooked. Its taste is not unlike the cabbage.

6th. Piles.—Trunks of the cabbage palmetto show a wonderful durability as piles in under-water building. Piles in the wharves of Havana of this material are said to have been in use for more than one hundred and fifty years. and are still in a good condition. The foundation of Fort Moultrie was also built of palmetto.

7th. Potash—Ashes of the palmetto lixivated and steamed yield a good quantity of potash.

ARTICLES MADE FROM THE SAP.

1st. Tanning.—Tannic acid is made from the roots, the trunk and leaves. The common progress of tanning with oak or hemlock barks always adds to the weight of the leather. As yet no method has been discovered by which, in tanning, an increase of weight can be avoided except by the use of tannic acid.

2nd. Medical Uses.—A certain preparation of the oak gives a medicine which has a happy effect when used for the throat and breathing organs.

3rd. Coloring Mat er.—Through simply steaming the clarified sap a known dye is obtained which dyes a pretty brown.

ARTICLES MADE FROM THE FIBRE.

1st. Brushes.—The rough, stiff fibres at the point of the leaf stalk made into brushes through a special process.

2nd. Mattresses.—The leaf is split to a requisite fineness, curled, then ran through a peculiar machine, pressed into bales and sent to the mattress manufactory.

3rd. Upholstery.—The durability of the fibre as compared with other materials, recommends it for upholstering purposes. The long tough fibre holds its place until the furniture has become unusable.

4th. Cordage—The long tough fibre seems very suitable for certain grades of cordage.

5th. Paper-making.—The different grades of fineness which we have in this fibre make it a valuable addition to the article to be selected from in manufacturing paper. It is suitable for all qualities of paper, from the roughest roof paper to the finest sort of bank note and bonds.

6th. Wood Pulp.—The great solidity of palmetto wood pulp makes it of more value than any other wood pulp. It is to be recommended to manufacturers for the making of pails, tubs, casks, globes, scrolls, wheels, etc.

7th. Felt.—The finer fibres felt very easily and can be put to many uses, viz., in the place of wool felt in ship-building, and for the polishing of quartz and other stones. With a mixture of 48 to 60 per cent. of wool it can compare with all other felts.

8th. Stuffs and Carpets.—There seems to be no reason why the fine fibres cannot be spun and woven into stuffs and carpets of different qualities.

9th. Underground wires which are covered with chemically prepared palmetto fibre, have stood unusual tests without injury. For protecting single or small wires this fibre is perhaps the best covering that has yet been discovered.

Many of the methods for using the palmetto described above have borne the test of actual experiment. The number of these uses grows continually larger. The products have already become valuable articles of commerce. So soon as the achievements of Dr. Loomis, of Fernandina, have become kown, capitalists in many of the favorable points of Florida will hasten to build factories for converting the palmetto into useful and ornamental articles of commerce. Then the hitherto neglected and worthless palmetto lands will become of high value to the country.—St. Augustine News.

DRUG REPORT.

(From *Chemist and Druggist.*)

London, November 28th.

CAFFEINE—The market remains firm at last week's quotation viz. 18s to 19s per lb according to quantity and position. The manufactmers are very busy, and do not much care to sell for some months ahead. They seem both to be of opinion that, if any change is made, it will be towards higher rates. It is said in the Ceylon papers that there has of late been a very strong demand for tea-fluff, red leaf, and tea-sweepings on the part of dyers, who have found a profitable use for these articles in their industry.

CARDAMOMS—At today's sales the supply was small. It consisted of 163 packages, of which 78 sold at steady prices—viz: Ceylon-Mysore, medium to bold round pale 2s 2d to 2s 3d per lb; smaller size, but good appearance 1s 8d; small to medium, fair pale to brownish 1s 4d to 1s 6d per lb. Seed realised from 2s to 2s 2d per lb.

CINCHONA—At today's drug-sales several parcels of South American and other cinchona-barks were offered; The most interesting lot was one of 12 serons, recently arrived from Payta (Peru), which sold, with good competition at 10½d per lb for fair Loxa quill 7½d for mixed Huanoco, and from 2½d to 6½d per lb for damaged Huanoco. Sixteen bales of Maracaibo bark realised from 7½d to 9d for sound and 8d per lb lor damaged. Of the other lots offered, very little was sold.

VANILLA—About 2,000 lb offered today and sold, with good competition, at steady rates, especially for short beans.

ESSENTIAL OILS—Of Lemongrass oil 2 cases of Winter's brand were taken out, while 5 cases of Winter's Citronella were also bought in at 2¾d per oz. Citronella oil is again much dearer; 1s 6d per lb has been paid for drums on the spot, and 1s 7d per lb for small parcels in drums. It is said that there are now no further sellers below 1s 8d per lb. Lemongrass oil is also firmer; 2d per oz has been paid on the spot, but 2 1-16tns d is asked. For shipment 2d per oz c i f, January-March, is reported paid.

QUININE—Tending lower. No business is reported this week, but there are sellers of second-hand German bulk quinine at 1s 1d per oz.

COCA-LEAVES—8 bales of damaged but otherwise fair thin Truxillo leaves sold without reserve at 10d per lb to 11½d per lb today. Sound quality was bought in at 1s 2d per lb, and good Huanoco character at 1s 6d per lb.

KOLA—About 1d per lb dearer, with a fair demand. Of 39 packages, 5 sold at 1s to 1s 1d for fair to dood West Indian, and at 7d per lb for ordinary Malta gitto

FLOWER SEEDS AS A PAINT.—A South of India correspondent writes:—

"I believe we have made a discovery that in the hands of a clever person might lead to a new industry. Miss———had gathered a few seeds of that flame-coloured spiked flower—I forget the name that grows in several Nuwara Eliya gardens (like a sceptre) and put them in a little wooden box 7 or 8 months ago. Today on opening the box she found they had all melted into a thick shiny tarry substance. I tried to stick two sheets of the *Observer* together with it, but it is not so much like glue as a sort of paint. I have polished my boots and shoes with it and they look beautiful. Also I have painted the little white wooden box with it and it looks as if it had been done with black enamel paint." We are puzzled to know whether our correspondent means a Lobelia or "red hot poker"; the seed of the latter, however, we have not observed as at all conspicuous. Mr. Nock will be able to decide.

OUR MODEL COCONUT PLANTATION:

ITS PLANTER AND OWNER:—A VETERAN PIONEER.

We have already referred to the early career of Mr. W. H. Wright, an example in so many ways, especially in his energy and ingenuity, to the rising youth of the island. Mr. Wright is now in his 75th year, but is wiry and muscular enough to warrant the expectation of another ten years of work with almost unabated vigour. His education as a boy in Colombo had not many advantages—he never entered Academy or College—but he got a fair grounding in the three "R's" at the Orphan Asylum and it may have been his own fault that he did not go further; for in his very early years, he showed a greater interest in everything outside, than in the school-work. In every species of manual work he was certainly interested and in this way became a jack-of-all-trades—acquiring what proved invaluable accomplishments to him afterwards in his jungle-work, when he could, on an emergency, act tailor, shoemaker, carpenter, mason, doctor, or farrier as the case called for. Mr. Wright's first engagement was under the Hon'ble Geo. Turner and David Baird Lindsay on Rajawella estate as Assistant on £2 10s (30 dollars) a month, of which—be it noted by the youth of the island—the young lad remitted £1 monthly to his mother. He worked so hard here, that Dr. Ferdinands who came the way, remarked to his Peria Durai: "Why you will kill this lad." He, however, left soon after with good health and the best of certificates and next got a place in Kandy under Major Badly, R.E. From there Mr. Wright went to Peradeniya estate and by 1842-3 (when 21 years old) he had, practically, full charge of, and opened the coffee plantation of this extensive property—Messrs. Viscardi and Vallance, the chief Superintendents directing their attention more to the Sugar. From Peradeniya, a little later, Mr. Wright was accustomed (an evidence of his active habits) to drive to Colombo 72 miles after work on Saturday and be back for his duties by Monday morning. He won the full confidence of Mr. Christian and other members of the firm of Messrs. J. M. Robertson & Co., and whenever any member of the Firm upcountry, wanted cash after the Kandy banks were closed, Mr. Wright could get them any amount of money up to a thousand pounds from De Soysa's private bank without even a chit, only giving an order on the Colombo firm: such was the confidence placed in him alike by Europeans and natives.—While he was at Rajawella there was a terrible outbreak of cholera and coolies were dying, five and six a day, on other places round, but Mr. Wright was able to keep his coolies in health by a simple means: every morning at muster he had a supply of powdered charcoal (burnt coconut shell) near him and as each man answered to his name he had to come up and swallow a teaspoonful from the master's hand, followed by a drink of water.

Mr. Wright's first venture in planting on his own account was in the Wevakelle estate, Dolosbage, on which he spent R15,000 in 15 months and then sold it for R30,000 to Dr. Shipton. In the closing years of the "fifties" his attention was directed to Haputale and he bought several blocks of land from Government. Koslande was the only one that he retained eventually, and after about two years of work he bought from his partner Mr. John Hamilton, the veterinary surgeon of Kandy, the half share of this property for £2,200. While living there he purchased Mr. Corbet's two rifles and two of Mr. Jack Tyndall's for £100, and after killing his forty elephants he sold the battery for the price which he originally paid for it. He saved Mr. Tyndall when attacked by hornets on a notable occasion. Mr. Wright was one of the pioneers in the South-eastern division of Haputale where we first met him in 1865. He did exceedingly good work there as a planter, while he was always ready to advise or oblige a neighbour or indeed passing visitors—as Sir Hercules Robinson found, when in journeying from Hambantota to Nuwara Eliya, His Excellency was indebted to Mr. Wright for supplying his suite at a pinch with the services of some 50 coolies to carry baggage from Wellawaya to the Sanatarium. Eventually Mr. Wright sold his Koslande property to Messrs. Pineo and Bennett for £21,000. The history of this transaction is worth recording. Mr. Pineo asked: "Would Mr Wright listen to any offer for the place?"—"Yes," he replied, "if a fancy price were given." "How much would you say?" "£24,000—that is £8,000 down and for the balance £2,000 every two years and interest at 8 per cent." Mr. Wright was asked for a written statement of the offer, but he said: "No. I give you my word as a gentleman and expect you to take it as a gentleman. I give you one month to decide and at the end of the time I am free to sell elsewhere." Next day another gentleman came and offered Mr. Wright £2,000 down as a bonus if he would sell to him on the same terms, but he refused and lost the £2,000 sooner than break his word. After selling, Mr. Wright returned to Colombo, where his enterprise in house-building and in gardening was much admired. Later he parted with his residence—"Wilhelmruhe," Turret Road—and went to Mirigama to open Kandangomuwa coconut plantation.

Mr. Wright's reminiscences go back to the days of Governor Sir Edward Barnes whose face and form he recalls, as also those of a long succession of British Governors, many of whom took notice of the enterprising Horticulturist by reason of his displays of new products at Agri-Horticultural Exhibitions in Colombo and Kandy. In this way, Sir Henry Ward took special pains to have Mr. Wright's vanilla—then a rare product worth its weight in gold—sent to Europe for a French Exhibition. [Some of the vanilla that he cultivated at Peradeniya was sent home to Baring Bros. and fetched 5 guineas a pound.] Still more interesting is it to hear the veteran subject of our notice speak of Geo. Bird—the "father" of Ceylon coffee planting—whose stalwart form was only equalled by that of the brothers Reid of Rajawella, "Stumps" and others of the early planting pioneers. Long may the Chief of Ceylonese Coconut Planters survive to tell the tales of his early days and still more to point—with honest, justifiable pride—to the work of his brain and hands in what is, in our opinion, the model Coconut Plantation and Planters' Fruit Garden of the island of Ceylon.

To exemplify still further Mr. Wright's "pluck," we may mention that should he sell "Kandangomuwa" for a fancy price, which may be learned on application, his determination is to get another block of waste land and open again in coconuts. This speaks well for a veteran of 75 with 60 years of work behind him and who has never been out of Ceylon, his only sea voyage being in a brig he chartered to carry rice from Colombo to Hambantota, to save his own and neighbourhood coolies in Haputale from starvation!

UVA: PLANTING NOTES BY AN "OLD HAND."

Bandarawella, Dec. 17th.

Lovely weather for the past week, but the hot sunshine is rough on young plants. The seed and plant market someway or another is always a lively one, and sunny Uva's young tea fields will require much supplying.

Crumbs of comfort for cacao planters are to be found in the following newspaper's paragraph. "There is no check to the revival of trade in America which has been such a feature of the situation in recent months. Phenomenal grain crops have been harvested and there is every sign that during the year the circle of business activity will continue to widen and expand." The M'Kinlay Bill and depression in America were the causes of our loosing good prices for our cacao, but now that the last is absent, let us hope that the Americans will give such prices for our cacao that prosperity will again be our cacao planter's portion.

LABOUR.—This difficulty will again be a newspaper topic in April of 1896. Coolies have not come in from the Coast. The cultivation of tea is extending and, as the tea bushes grow older, the bearing increases. What do you say to the following? "As a matter of fact labour creates and employs capital and the labourer makes the advance to the capitalist. *Labour* in ninety-nine cases out of a hundred *is performed before* the *wages are paid*—and the wages are paid out of the product of labour, *not* out of capital." We have been all calling out for capital to come into the country and made no provision for the labour. The Ceylon Government will be very blind to its interests and to those of its subjects, if they don't quickly take the initiative in getting coolies from pastures new.

Bandarawella Hotel is most excellently managed. The food is plentiful and well cooked. Tourists and lowcountry people have only to stay a day or two at this comfortable Hotel to wish to repeat their visit and recommend it to others.

Trains are running well to time.

Pate's coach is well horsed.

CINNAMON:

THE PRICES AT THE LAST QUARTERLY SALE.

THE particulars which have come to hand by the last mail of the Quarterly Auction sale of Cinnamon held on the 25th ultimo, confirm the view we expressed on the previous sale of August last. The prices recorded at that sale, we felt, could not be maintained, if indeed some of them were not fictitious, or represented bids by speculators, who would be found wanting on settling day. This fictitious or doubtful advance had reference chiefly, if not solely, to common sorts of spice and medium marks. The advance in the price of the leading marks, such as Golna Pokuna and Wester Seaton, though substantial, was not phenomenal, and indicated about 2d to 3d per lb. Part of this advance has been lost, the prices for the finest spice having receded from 1d to 2d per lb. The drop cannot be said to have been wholly unexpected, as the good brands had shared to some, though to a small, extent the benefit of the inflation. As compared with May sales, the rates must be pronounced satisfactory—A. S. G. P. (Golna Pokuna) and D. S. W. S. (Wester Seaton) having realized from 7d. to 1s. 4d. according to quality. J. D. S. R. (Rajapakse Mudaliyar, we suppose) took scarcely second place, having regard to quantity, with prices ranging from 9d to 1s 3d. Indeed, it looks as if his average must be quite equal to, if not higher than, those of the two brands we have named first. The drop in prices has been most marked, as was to be expected, with the brands which were run up extravagantly last August—as much as 100 to 150 per cent over previous averages, as against the 15 to 20 per cent. of the finest spice. Thus O. R. in diamond whose Seconds had sold at 1s. 7d., or 1d. to 2d ahead of the Firsts of the premier brands, and A. S. (whose Fourths were knocked down at 1s. 4d., while its Thirds fetched 10d. in August last) were nowhere at last month's sales. Then C. H. De S. Kurnwitte, an Estate belonging to the De Soysa family, had its spice run up at the sale before the last to 1s. 7d. per lb. for its Firsts, or about 100 per cent; while in November it ran down to 10d.—a price somewhat higher than its ruling average for years past. It would be interesting to know whether the Proprietors of the medium and common marks obtained the prices noted in the August catalogues on settling day.

What is satisfactory is that, though there was a collapse in the inflation attempted four months ago, and though the prices receded somewhat for the marks whose spice had a *bona fide* sale, the prices which ruled last month were in every way reasonable and compared favourably with the averages which had ruled just before the fictitious and forced advance, and indeed with the averages for some considerable time past. It may be that prices were kept up by the speculators of August last, who stood to lose heavily if there was a sudden and serious drop; but more probably the prices which ruled represent the actual value of the spice at the present time, having regard to new uses and a consequently steady demand. This view is supported by the fact that more than two-thirds of the exceptionally large quantity catalogued found buyers at the last auctions, or immediately after, while the demand since, both here and in London, has not slackened. But for a genuine inquiry for the spice, the effect of rushing a large quantity into the market under the influence of the fictitious and speculative operations of August, would have been a serious fall in prices. That there was no such fall in the value of the brands which found *bona fide* buyers in August, is a healthy sign and promises well for Cinnamon Proprietors. The activity of the local inquiry for the spice just now, is confirmatory of our view, that new uses are creating a steady demand—though this inquiry is doubtless stimulated just now by the delay in harvesting operations. The exceptionally wet weather of October caused almost a general suspension of peeling; and since then a heavy leaf bud has rendered harvesting operations next to impossible. As a consequence, very little Cinnamon can be got ready to be shipped in time to reach London for the next sale on 24th February. Peeling is said to have only just commenced in a few places, but the sticks do not part with their bark easily; and if operations are not to be suspended, they will be necessarily slow. Meanwhile we learn that there are buyers for the ordinary assortment of quills at from 60 to 65 cents per lb.

This is what a leading London firm in the trade reports of the last sale:—

Cinnamon.—The closing sales of the year were held on the 25th inst., 2,817 bales Ceylon being catalogued, against 667 bales at the August auctions, an

and 2,516 bales at this period last year. On this occasion there was no speculative movement, and, as anticipated, values gave way, but a genuine trade demand prevailed and about 2,050 bales were disposed of in the room and immediately after the auctions, at decidedly easier prices when compared with August rates. As against May sales, regular rates, the prices now obtained must be considered favorable on the whole. In view of the inflated prices at the August sales, it is difficult to compare the rates now realized.

The fine and good brands sold from 7d to 1/4 per lb. for fourths to superior, and common to medium grades ranged from 7½d to 11½d per lb. for fourths to first.

793 bags chips &c., were offered and sold at 3d to 3¼d per lb. quillings, clippings, and broken 7½d to 9d per lb.

Stock of Ceylon 5,716 bales against 1894, 3,567; 1895, 3,788; and 1896, 3,742; bales.

The next sales are fixed for the 24th February 1896.

London, 27th Nov. 1895.

FORBES, FORBES & Co., Limited.

THE SALE OF ESTATES IN NUWARA ELIYA.

Regarding the sale of estates in the Nuwara Eliya district which we reported in our last issue, our evening contemporary says:—

Acting on behalf of a sterling London concern, the Nuwara Eliya Estates Company, Limited, Mr. W. Megginson of Carolina has just completed arrangements for the purchase of Portswood estate, Nuwara Eliya, from the Hon. Sir J. J. Grinlinton. The price paid is about £94 per acre. The adjoining estate, Kenmare, has also been purchased by him for the same company, and now we hear that the next estate, Tommagong, the property of Mr. J. MacLaren, and Lover's Leap adjoining, have also been acquired for the company referred to. The pick of the basket, however, is Pedro—the well-known property belonging to Captain Bayley—which, we understand, is also included in the sale, though the price paid has not yet transpired. Rumour, however, fixes it at considerably over £90 an acre. Besides these, Concordia has passed into the same hands—another valuable property in the vicinity. The properties thus acquired by Mr. Megginson form some of the finest and most remunerative estates in Ceylon.

From our Directory we take the following figures showing the acreage of the estates:—

	Total.	Cultd.	Tea.
Kenmare ..	230	170	170
Lover's Leap ..	150	139	139
Tommagong ..	248	250	180
Pedro ..	375	275	275
Portswood ..	502	256	240
Concordia ..	186	188	106
	1,691	1,268	1,110

Our contemporary adds:—

Besides these estates, an attempt has been made to acquire two well-known Dimbula properties, but without success, for we hear that Messrs. Cross and Ballardie refused to part, even after £100 sterling an acre had been offered them! This certainly beats the record, and should have an important influence upon all tea estates property before long.

THE GOVERNMENT OF MADRAS, it is said, will shortly abolish the post of Quinologist, lately held by Mr. David Hooper, and separate the Botanical Department from the Cinchona Department, the headquarters of the former being transferred to Madras. An old Nilgiri planter lately connected with the Prison Department will probably be offered the post of superintendent of the cinchona gardens.—*E. Mail.*

COLOMBO TEA SALES.

Wednesday's sale closed the series for the year, and Messrs. Forbes & Walker show that the totals for the year (up to Dec. 11) are 415,697 packages = 25,431,523 lb. offered, of which were sold 237,728 packages = 19,122,336 lb. as compared with 255,722 packages = 20,281,265 lb. offered of which 193,343 packages = 15,279,141 lb. were sold to same date in 1894. We append a table with offerings, sales, and prices for the 12 months as compared with 1894. The highest average was 56 cents on the 2nd Oct.; and the lowest 40 cents on Dec. 18th; the biggest sale 600,718 lb. was on Jan. 16; and the smallest 178,254 lb. on Nov. 6. The average for the year is 48 cents as compared with 44 cents in 1894. The tables are as follows:—

SALES OF TEA IN COLOMBO DURING 1894-5 WITH AVERAGES.

1895.

Date.	Offered. Pks.	Offered. lb.	Sold. Pks.	Sold. lb.	Somerville & Co.'s Av.	Forbes & Walker's Av.
Jan. 4	68 9	515935	5824	449 37	53	54
,, 9	5803	463576	4529	360885	53	50
,, 16	10464	792934	8015	600718	53	52
,, 23	7595	590616	6485	500996	53	52
,, 30	4730	388247	3374	274720	55	55
Feb. 6	4413	394973	3..6	291994	55	55
,, 13	54 5	451875	4142	352622	52	53
,, 20	5858	5 9083	3253	310940	52	54
,, 27	4573	357967	3606	28 334	53	52
Mar. 6	5198	417716	3869	3.6625	53	54
,, 13	6195	520470	4485	380557	50	50
,, 20	62 2	514135	4357	358076	50	50
,, 27	6147	542319	4466	3765 3	48	48
April 3	5517	44 003	4119	341180	48	47
,, 9	5211	436420	4226	3557 7	46	47
,, 19	7470	582909	4133	350557	46	44
,, 21	5825	476143	3632	307085	45	43
May 1	6700	532577	4029	334785	45	45
,, 8	6011	490793	3335	28 790	43	43
,, 15	7311	585097	4706	369151	42	41
,, 22	8261	717387	6692	559593	41	41
,, 29	8229	644322	6 00	172512	41	41
June 5	6494	511596	5077	193780	43	44
,, 12	81 5	656418	6586	491756	43	41
,, 19	7560	63 225	6353	531755	43	43
,, 26	6.95	519082	4512	41 3 0	43	43
July 3	5361	451895	4525	362411	43	44
,, 10	6 45	5 2 18	5271	448427	43	44
,, 17	8003	613586	6 83	4929 3	44	45
,, 24	5931	486128	5522	400154	41	41
,, 31	55 4	45 896	5141	423161	51	49
Aug. 7	4581	371671	4277	333447	51	55
,, 14	5521	450021	4641	379350	52	51
,, 21	5858	432447	4849	38 839	52	52
,, 28	5103	38 059	4247	321892	52	50
Sept. 4	4783	393277	3312	39 0 8	52	53
,, 11	6497	516 28	5811	462799	51	55
,, 18	6159	510500	4535	385 96	54	54
,, 25	5779	467650	4519	3617 9	56	52
Oct. 2	6663	541162	5125	420763	56	56
,, 9	68 1	558050	4262	333640	51	51
,, 16	7 22	607321	4835	419942	51	51
,, 23	6818	497953	4042	2 676.	48	45
,, 30	4249	345377	2300	188162	48	48
Nov. 6	3411	26 953	2126	178251	48	48
,, 13	5145	479635	3508	284361	48	47
,, 20	8290	70.577	5923	520067	43	44
,, 27	6573	514233	4 91	349433	43	41
Dec. 4	7393	60 587	5689	465077	43	41
,, 11	6.65	491635	5451	431433	42	41
,, 18	9126	75 503	6437	517063	42	40
Total	324,103	26,715,941	241,062	19,571,033	48	48

1894.

	Pks.	lb.	Pks.	lb.	Av.	Av.
Jan. 3	8143	688223	51 0	45 394	34	35
,, 10	5519	44 0 1	4129	3 117	4	35
,, 17	6971	565045	5353	43 414	34	35
,, 24	4004	311 9	38 1	2:64 6	34	34
,, 31	3 55	28 857	2302	2 868	6	3
Feb. 7	3080	2603 7	3 0	153273	41	39
,, 14	47 6	3709 11	4100	334191	1	40
,, 21	49 9	330 15	4353	305 101	43	43
,, 28	4138	333,72	3230	150177	42	39
Mar. 7	1162	3 633	1887	122585	43	4
,, 14	5755	440 15	4819	377611	43	42
,, 21	3005	282 01	2331	2 6415	43	42
April 4	9152	721 05	5786	448772	40	40
,, 11	6427	4744 1	4043	278463	37	47
,, 18	59 4	50.671	4051	3 6 11	6	37
,, 25	5634	479416	4 6	370330	35	38
May 2	4258	3 1790	3096	23 83	39	41
,, 9	5044	495353	4081	32 963	42	41
,, 16	76 1	619 64	5113	4 3652	38	39
,, 23	5634	453708	4 73	3 123	38	38
,, 30	7359	5 76 5	4803	25 309	39	39
June 6	5373	4126 5	4185	285 92	39	38
,, 13	6417	1 572	4998	3 8 15	37	37
,, 20	6 75	5710 4	5567	44803	40	40
,, 27	6005	46 533	4 4	361760	41	49
July 4	5042	402313	4022	31 30	44	4
,, 11	5633	415303	4368	3 15.9	43	42
,, 18	6938	5 83 4	5587	4 0 03	40	40
,, 25	57 5	45 1 1	4774	381472	43	43
Aug. 1	4 37	321 4	38 3	31120	46	46
,, 8	4178	338 80	3519	2 46 1	47	47
,, 15	5127	408 51	4272	337020	46	47
,, 22	4641	3 103	3533	273802	43	45
,, 29	3795	2749 5	3001	230247	47	47
Sept. 5	3 7	261 06	2795	2 2011	44	45
,, 12	40.6	330831	30.8	24 879	47	48
,, 19	4083	318348	31 3	242543	52	50
,, 26	3 31	31 6 9	3529	164873	52	52
Oct. 3	3137	241042	2329	196183	52	52
,, 10	46 1	382978	3552	288809	51	52
,, 17	5771	44 53	4002	31 021	51	52
,, 24	3809	320 07	27 1	253 82	52	52
,, 31	4531	351712	35 5	27 0 3	54	53
Nov. 7	3340	282 96	2612	226 82	50	55
,, 14	57 0	41 7 9	4750	32 789	51	53
,, 21	4873	38 013	3415	28 667	51	54
,, 28	5714	4 8865	2946	236461	50	52
Dec. 5	5180	4 05 3	4093	320013	51	5
,, 12	6220	499105	4534	36 509	48	49
,, 19	6603	532883	5907	472 24	53	51
Total	261,209	20,913,082	198,699	16,053, 40	44	41

THE NUWARA ELIYA TEA ESTATES COMPANY, LIMITED.

This is the title of the London Company which has just purchased the Pedro, Portswood, Lover's Leap, Kenmare, Tommagong, and Concordia estates in the Nuwara Eliya district. The Company has a capital of £150,000, and the directors are Messrs. C. A. W. Cameron (Messrs. Frith, Sands & Co.), Winchester House, Old Broad St., London; Charles R. Robson, Batchacre Hall, Newport, Salop; and H. J. St. J. Oscar Thompson, (Messrs. W., J. and H. Thompson, Mincing Lane). The bankers are the National Bank of India; the solicitors Messrs. Freshfield and Williams, 5 Bank Buildings; the secretaries and managing agents in London, Messrs. Frith, Sands & Co., Winchester House, Old Broad Street; Ceylon agents, Messrs. Leechman & Co.; and General Manager of estates in Ceylon, Mr. W. Megginson. The first issue of shares has already been subscribed and allotted, while the second issue has been fully applied for, and there are no shares available for subscription in Ceylon. There has been a good deal of exaggeration in the reports that have gained currency as to the sum paid for the properties, and we are able to state authoritatively that the price paid is £83 10s per acre of tea all round. With regard to the offer for Edinburgh and Inverness estates, while we are not in a position to give the exact figures, we are assured on authority that the price is considerably less per acre than that paid for the six above-mentioned estates.

NATAL TEA.

During the past few years, the cultivation of tea in Natal has made rapid strides, the acreage now reaching four figures and the output six. These figures, at first glance, will not appear very formidable to Indian planters, for an area of but 2,000 acres, and a production amounting to something like 600,000 lb., represent but a bagatelle when compared with our local figures. Where the interest for the Eastern producer comes in, however, is in the fact that the Natalian infant, under the healthful influences of congenial climate, careful sustenance, and attentive nursing, is annually verging towards robust youth, and gives promise of developing into an exceedingly healthy and powerful adult. Last season's crop was an advance of about twenty per cent upon the production of the preceding year—a progress of most appreciable dimensions, and the present conditions of the trade indicate still more rapid advances year by year. The cultivation of coffee has practically given way to the sister industry, and even sugar—Natal's premier product—is experiencing the slight of defection on the part of some of its erstwhile adherents in favour of tea. Advocates of the tea industry in Natal claim as one of its chief advantages over the growth of coffee the comparatively small risk of destruction by hail; whereas tea is continually manured and gathered, the whole crop of coffee must stand, till it is ripe for the pluckers, a probable victim to a single heavy hailstorm, and the Colony knows only too well how it *can* hail periodically. A tea garden attacked by a hailstorm would present, it is reasoned, but one *flush* to the destroyer, representing but a portion of the crop, and this would not necessarily be devastated. In the case of coffee, the elements would enjoy an unrestricted walk over, wreaking, not only incalculable damage on the sticks, but perhaps wrecking the heart of the victimized planter. Then, as regards its merits over sugarcane cultivation, it is pointed out that there is no risk from fire, and cane fires—accidents sometimes but most often the act of a revengeful or discharged coolie—are the nightmares of the sugar planter. Again, it is claimed that, whereas coffee has suffered from the borer, *Hemileia vastatrix*, and short rainfall, and sugar by excessive expenditure for machinery and other drawbacks, tea has experienced immunity from pest or serious disease, and cheap female and juvenile cooly labour can be utilized in its production. The yield per acre, too, in the Colony is estimated to be considerably in excess of that of India, and equal to the best Ceylon gardens. Cooly labour there is, of course dearer than on its native soil, but only about half the number of hands are found necessary, and the market returns so far have afforded ample recommendation to planters to prosecute the industry. The rainfall, an average of about 39 inches, though necessarily less than the humidity of more tropical climates, is steady and gradual, and perhaps more effectual than torrential downpours, and for comfort in working in the gardens Natal claims favourable comparison. It will thus be seen that, from the Colonial cultivator's point of view, the industry offers much encouragement, and one is not astonished, therefore, at the leaps and bounds by which the production is progressing.

The principal tea district is situated a few miles to the north of Durban on the coast, close to the village of Stanger, on the main road to Zululand, about 29 degrees south, but at intervals all along the coast small areas are under cultivation, and at all these gardens convincing proof has been afforded of the suitability of climate and soil for the plant, specimens of which close upon forty years old, can now be seen enjoying a perennial youth. South coast planters have also lately been pushing forward, and extending their operations in the cultivation of tea, and already several limited liability companies have been established in the country for a more widespreading prosecution of the industry. "Natal tea" is used pretty extensively locally, and commands a considerable trade in the Cape, Transvaal, and other States of South Africa, and now that railway extension in that continent has been pushed forward to limits hitherto only

reached by ox-wagon, a greater market has naturally become open to cultivators, and a greater stimulus has necessarily been given to the enterprise. One firm, not only employ an experienced traveller throughout South Africa, but periodically ship parcels of their produce to England. Natal tea has a decidedly characteristic taste, but it is said—and this is worthy of note—that, like Transvaal tobacco, the taste is an easy and pleasant one to acquire, and, when once acquired it is not readily relinqu'shed. The Colonial planters depend entirely upon coolies for their labour, and this class of Indian subjects has long since become indispensable to our friends on the other side of the ocean, for a successful development of many of their outdoor industries. In this conne tion it may not be inappropriate to mention here that one enterprising planter lately put a hundred acres under rice, and the result attained was said to be very satisfactory This was, we unde.stand, an initial experiment, but probably more will be heard of rice cultivation in Natal ere long. Sufficient interest for the present attaches, for us, to the tea industry, and our Colonial cousins advance in this direction will probably be eagerly watched from this side. It may be mentioned that the plucking season in Natal commences in September and closes in June, so they are now in the middle of their operations. The official statistics of the output at the close of the season will be interesting.—*Capital.*

TODDY AND TREE TAPPERS.

"Habit is everything." The profound wisdom of the old saw struck me very forcibly as I took my early morning ride through the almost boundless palmyrah topes which stretch away inland to the hills, on which the great blue-grey monsoon clouds are resting prior to a northern journey, and on the other side away to the calm warm sea.

In and out between the slender trunks of these lofty giants jogged the toddy drawer, pole over shoulder and with his "goods and chattels" suspended therefrom. In the left hand a wooden crutch. Hurrying from one tree to another to gather into their plaited baskets the night's yieldings. The average height of the trees roundabout was full 35 feet; while some conspicuous 50 foot wallahs reared their rustling fan-shaped leaves in all the dignity of their riper years.

I watched one drawer. He deposited h's pole and slung baskets at the tree foot and placed his crutch against the trunk. From a hanging side basket (from which protruded a forest of brush and knife handles) he withdrew a heavy bladed weapon. It was like the "kookrie," without a point to it, and heavier. A murderous weapon. This he sharpened on the pole of the crutch and replaced in his basket. Then he put on his climbing "irons" which consisted of a small circle of plaited palmyrah leaf!

The crutch gave him his first foothold, and then embracing the tapering trunk, up he went at a rapid pace. Up till he reached for the strong fibrous shiny "mattais" (the stalk of the leaves) and swung himself into the rustling leaves. Then leaning over here and there, supporting himself with his knee-pits, he emptied the small chatties into a division of side basket—trimming afresh each spathe before adjusting the chattie, with his heavy sharp knife, and coating each pot with lime from another division of his basket. A few rapid movements executed in the dizzy heights, and he was as rapidly descending the tree. Emptying the toddy into one of the larger slung baskets he shoulders his pole, reaches for his crutch and off for the next tree. He is not really drawing "toddy" but "pathani," which is boiled down into jaggery, for which he need take out no license. But the toddy drawer is doing exactly the same without liming the pots, for that process prevents fermentation.

There is toddy *and* toddy. The article freshly drawn, sweet and cool is excellent, but the foul smelling fermented sour liquid which stands in the big chatties in the reeking toddy shops is as unlike; it is a decomposed corpse to a young baby. The smell of a much frequented toddy shop is sufficient to intoxicate anyone but a confirmed drunkard or a Tamil fisherman. But it was not the "habit" of *drinking* toddy which caused the old saw abovementioned to flash across me. It was the "habit" of drawing toddy. For months on and the toddy drawer is engaged, sometimes both at dawn and at eve at other places only once during the day, in scaling these tall trees one after the other. A man will go up twenty trees in an hour or so, and then walk his six or eight miles to deposit the toddy in a licensed shop! I do not know what this would pan out into in raising foot-pounds per second, but it seems to me that the result would be fairly "tall." But habit comes into the equation, and how much are we to allow for that? Not quite "everything," but a good deal.

The drawers down in these parts are, for the most part, well set up; broad chested, deep and muscular; points developed doubtless by continuous generations of toddy drawing. Physical development secured at the cost of the mental deterioration of the drinking community.

Stern and terrible are the threats held out by the Great Sirkar against those who infringe the laws regulating the import, export, transport, &c., of intoxicating liquor—up to one thousand rupees—six months or both! And yet many are the ways and means by which the crafty law-breaker evades the meshes of the law, small as they are. Tapping the silent trees at night and holding a revel by moonlight in the tope is a favourite amusement, and now and then the merry party are disturbed by a watchful Abkari officer with his band of men, and a rare game of hide and seek goes on in and out of the old trees ending, perhaps in the offenders planking down their five-rupee fine on the Magistrate's judgment, and returning to their unlawful pleasures "ek-dum."

The toddy shops about here are remarkably uniform. Usually situated on the outskirts of the village, they are conspicuous. A regulation T. S. consists of an inner room and outside three walls of palmyrah leaves and a roof and a few leaves for a carpet. Along one wall stands two or more toddy chatties—and the shop keeper during the day is usually asleep inside! There, with his license ready in a tin case for any questioning Revenue official, he remains doling out at the rate of 2 or 3 annas a gallon toddy to the thirsty souls. And when the sun gets low the little shop is quite animated as the workers of the day bring in their pice and sit round discussing the questions of the hour. These are the mofusil shops. The town shops are less pleasant. They smell evilly, and instead of the happy village folk we find the saturated arrack smelling gaol bird and harpies of the lowest type. The scum and the dregs of the dirtiest of dirty municipalities, and some of the most unfortunate of our fellow creatures. There they squat and drink the sour rotten liquid until night falls, and they reel out into the darkening streets to sleep off the fumes against the morrow Those are the two types I have met down here. I should like to see the one shut up and the other more frequent. But that savours of "Utopia."—"T." —*Pioneer.*

KOSHENA COCONUT ESTATE COMPANY, LIMITED.

The first statutory general meeting of the shareholders of the above Company was held this afternoon at the office of Mr C. E. H. Symons. There were present: Messrs. John Clovis De Silva, C. Malingan. R. L. R. R. Itanamalaga Chetty, and Mr. R. M. Colenda Vlan Chetty and Mr. C. E. H. Symons. Mr. J. Clovis De Silva proposed and Mr. R. L. R. R. Itanamalaga Chetty seconded the following resolution: —That the following gentlemen be appointed Directors for the year 1895: Messrs. Symons, J. W. C. De Soysa, C. Ramalingan and Bastian Fernando.—Carried. Mr. J. Clovis De Silva also proposed, that the Secretary do visit the estate and report to the Directors at least twice a year, on a fee to be fixed by the Directors. Mr. R. M. Colenda Vaul Chetty seconded.—Carried. A vote of thanks to the chair closed the meeting.

THE COCONUT-GROWING REGION BETWEEN CHILAW AND PUTTALAM.

SINCE the middle of 1888, we have made the journey from Colombo to the Rajakadaluwa district, north of the Deduruoya, half-a-dozen times at irregular intervals; and on each successive occasion, we have been more and more impressed by the need of that fuller, speedier and altogether more adequate means of transport which a Railway alone can afford. There are no wealthier native districts in the island than the maritime divisions of Negombo and Chilaw. The Marawila district is, we suppose, unequalled for its rich, continuous coconut groves and well-to-do population. Indeed for 50 miles north of the capital there is the same succession of villages, huts and gardens that marks the more familiar coast line towards Kalutara and Galle; but with evidences of much more prosperity and trading and travelling enterprise. Coaches and steamers as far as Negombo have full occupation, and very frequently native passengers wishing to be picked up on the roadside have to be left behind. Coaches and many other vehicles, north of Negombo, by no means suffice to meet the public needs. One thousand rupees per acre can scarcely purchase coconuts in full bearing in the neighbourhood of Negombo or Marawila; while, although we get into a drier region farther north—where tobacco gardens around Chilaw have to be regularly watered and where there is evidence of the palmyra palm finding a congenial home—still we have in the Madampe region some of the finest of Ceylon's coconut plantations as well as paddy fields; while there are also prosperous palm groves right up to the river.

It is, however, of the region north of Chilaw and the Deduru-oya that we have more particularly to speak. Rajakadaluwa is 56 miles north of Colombo, rendered readily accessible now by the fine iron bridge some 567 feet long with 8 pairs of iron screw piles, opened a couple of months ago and which bears the name of Governor Havelock and of Mr. W. C. Simmons, District Engineer. This officer of the P. W. D. has done excellent service not only in the successful erection of an important bridge, but on irrigation works in the remoter, and feverish divisions of Sabaragamuwa. What is now wanted to serve the Puttalam district (which we enter on crossing the Deduruoya) is a similar but less costly bridge across the Battuluoya (ten miles farther north) the neighbourhood of which is also the scene of active planting enterprise in coconuts, by Messrs. Seton, Baur and others. Indeed, all the way from the new bridge to Puttalam town, the land has been freely taken up for planting purposes, and ere many years elapse, the continuous expanse of jungle which, in the early "eighties," marked this road for well-nigh 30 miles, will be replaced by a continuous grove of palms with the inevitable multiplication of wayside boutiques, village settlements, labourers' lines, carters' sheds, &c., &c. Already the road—which we remember as undisturbed during a long afternoon over a good many miles, save by the one bullock cart, and a passing cheetah, which stood and gazed at the unusual intruders,—wears quite a lively appearance with native traders, villagers, carters, Chetties and Moormen and even horsemen and dogcarts. The development every year will be very rapid, both in cultivation and population; and the cry will be for more land which, we are glad to learn, is likely to be made accessible over a large division of the district, between the sea and a backwater which is expected to equal the far-famed Kalpitiya (Calpentyn) peninsula in its suitableness for coconuts.

Native capitalists do not require urging where land suited to the palm is offered for sale; but many of our readers will be glad to see what can be said for coconut planting in the Puttalam district. Nearly eight years ago, an energetic Assistant Government Agent addressed us on the subject of the development of his district and the need of better communication with the capital. The facts and figures adduced by Mr. Lushington convinced us of two things:—(1) the need and great advantage of constructing a railway from Colombo to Puttalam (and indeed as Mr. Lushington then stated, that the line to Jaffna should come via Chilaw, Puttalam and Anuradhapura); and (2) the wisdom of planting coconuts beyond the Deduru-oya. To take the latter topic first, we may give an extract from the old letter of March 1888 now before us:—

I can assure you that in parts of this district the crops with little or cultivation are enormous. In the Puttalam district as it *now* stands, *i.e.*, since the recent division the average throughout is 36 nuts per tree. 75 tress to the acre 2,700 nuts per acre, and we calculate the price at 2½ cents per nut which gives a yield of R67·50 per acre—but the average here is much reduced by some of the old badly planted gardens of Akkarai Pattu. At Chena Kudirippu and Arachchivillu (suburbs of Puttalam) the average yield is 60 nuts per tree *i.e.* 4,500 per acre, and the same applies to the well-planted lands of Abharai Pattu and a few gardens near Kalpitya and Karaitivu. This makes the yield equal to R112·50, but as most of the owners of gardens have numerons dependents who work in return for food they convert the nuts into copperah getting thereby 50 per cent increase in their returns. The average (good and bad together) throughout the Pitigal Korale South is calculated at 60 nuts per tree, while in the villages along the road from Madampe via Marawila to Vennappuwa and Nainamadam the yield is as high as 100 nuts per tree and in some gardens even higher. This brings the yield to 7,500 nuts per acre and the value R187·50.

Of course, we knew well that all the Puttalam district was not like Pitigal Korale South; but we also judged that if native gardens without cultivation or proper attention gave 36 nuts per tree per annum, there was great room for encouragement North of the Deduru-oya. At that time only one European planter had settled at Rajakadaluwa. We commissioned him to buy an adjacent block at the forestland sale for relatives; and, at the same time, the Messrs. De Mel and soon afterwards Mr. Baur and some others became neighbouring proprietors. A market was found for a good deal of the heavy timber cleared from the land; every care was taken in opening and planting; but unfortunately against our opinion and advice, the one Manager of nearly all the clearings would follow the native example of taking crops of plantains off the land while the coconuts were growing. The argument was that the plantains opened the soil—a superfluous work, as the good soil in these parts is specially open and friable—and sheltered the young palms while growing. Such experienced planters as Messrs. Jardine, Wright and Nicholas are dead against the use of plantains in such a case; while some of them think a crop or two of cassava kept at a proper distance from the palm far less if at all injurious and useful in shading the newly-cleared soil. Be that as it may, a stop was put to the plantain-growing as soon as possible, more especially as the native contractor for the fruit (huge boatloads are brought 50 to 60 miles to the Colombo market from this district as from Kegalla and elsewhere) bolted

with the proceeds to the tune of some 1,000 to 1,500 rupees!

Seven years ago, we took Mr. Jardine to visit Rajakadaluwa: it was a new district to him. He was struck with the growth of the young palms and with the fact that, although a dry district, much of the land lying low had water within easy reach in the subsoil which would probably sustain the trees in time of drought. But Mr. Jardine did not quite approve of the soil—a mixture of sand and light loam—and doubted its "staying" power, considering that it would have to be early and continuously supported by manure to ensure paying crops. Meantime, the palms grew and they had to battle with one year of nearly entire neglect through the illness of the Manager and our absence in England. This entailed extra expense later on, and a disadvantage through the advent of troublesome weeds in some parts scarcely got over to this day, although special credit is due to the great improvement effected under careful supervision However, the fields are now 6½ and 7 years old, and while unable to get Mr. Jardine again to visit the scene and perhaps revise his report of December 1888 in the face of a flourishing growth, we were fortunate in securing the presence of Mr. W. H. Wright with his unequalled experience of soils and cultivation in so many parts of the island. Mr. Wright had previously reported on plantations south of the Deduruoya; but he had never visited Rajakadaluwa. From the time we crossed the new bridge, during our four miles journey onwards, our companion was eagerly on the *qui vive* to note the peculiarities of the country, the vegetation, soil &c.; and he saw much which evidently did not please him. Indeed by the time we reached our destination, Toynbee, Mr. Wright had anything but a cheerful aspect. He, however, at once started off on a walk of inspection by himself and the result was eminently satisfactory. He found none of the dreaded burnt clay ("karameti") which he feared from what he saw along and near the main road at several points; he tested the soil by the cuttings, diggings, anthills, &c. he came across; but above all, he was completely satisfied by the actual growth and appearance of the palms and the number and size of nuts on those coming into bearing. Mr. Wright had a good deal of criticism to advance, of course. He utterly condemned, for one thing, sapanwood fences—judging from his own experience at Mirigama where he had to cut them down—as specially interfering with the adjacent rows of palms; and he had many hints to give in regard to improved cultivation. But on the all-important matters as to the suitableness of soil for coconuts, he had a strongly favourable opinion. It was impossible to foretell what twenty years might bring forth; but finer or more vigorous trees of their age, he had never seen even in the Mahaoya Valley and he saw no reason why, with due cultivation and such economic manuring as he was using on his own young plantation in the application of ashes and sheep manure, the fields should not yield successive liberal crops of nuts for a long period to come. Of course, there was a great advantage in seeing an estate after seven years, as compared with six months, in judging of the capabilities of its soil and of its future. At the same time, it is evident that between the Deduraoya and Puttalam, as indeed in the Rajakadaluwa division itself, there are great differences in the soil, even within comparatively short distances. The stiff clay found in some parts has to be carefully avoided by the coconut planters; though no doubt "liming" and "tillage" could do much to improve even such a soil. Mr. Wright is a great believer in the judicious application of wood ashes to palms at almost all stages. He would have all timber burnt and the ashes carefully gathered for application, rather than allow twigs and branches to gradually decay. The burning, too, is a preventive of malaria. All swamps and lowlying parts he would have carefully drained, squares raised and planted on. Of course, this is a common practice of good planters, though all may not have the means to do the works in the thorough systematic way which Mr. Wright has inaugurated near Mirigama. An estate Superintendent must cut his coat according to his cloth. Meantime we tender to the estate proprietors in Rajakadaluwa and beyond towards Puttalam, all the encouragement the veteran's opinion should bring to them;—only to profit by it, they must carefully cultivate their palms, weed regularly, cut down and bury all plantains, keep up a steady fight with the beetle enemies. It was pitiable to notice some fields of palms choked with weeds, or impoverished by plantains, or yellow and withered for want of drainage. Far better such should never have been planted; and even wealthy capitalists among our native friends are sometimes sinners in this respect—in not doing justice to themselves or their properties. However, visitors to a district should judge by the results due to proper planting and cultivation.

To turn now to the Railway: if its need was made plain to Mr. Lushington in 1888, we feel sure the encouragement and necessity have greatly grown since then and must go on growing every year. But a far greater importance is given to such a project when it is connected with an Indo-Ceylon Line. A metre-gauge Railway from Colombo due north through Negombo, Marawila, Chilaw, Rajakadaluwa, and Puttalam will pay splendidly on its own account and then when connected at Manaar with the South Indian lines, and extended thence or from Puttalam into Anuradhapura and Jaffna, we should have by far the most economical and advantageous system that can, at this time, be desired and introduced.

There is much on the journey to and from Chilaw to interest the traveller by coach and one has now the felicity of crossing the Kelani-ganga by the grand new Victoria Bridge—longer and bigger, more costly and showy, but not more useful than the sister bridge over the Deduruoya. All along the route we noticed a prosperous well-to-do people and a country eminently in need of communication by railway. Meantime both steamers (to Negombo) and coaches there and beyond serve their useful purpose. We heard of the Chilaw coach being fined for want of punctuality by the Postmaster-General; but, in our experience, the longest delays by far were caused by the Post Offices along the route. "Waiting for the mails" was the rule at nearly every wayside post. This ought not to be the case; and if there are to be fines, let them be imposed on those really responsible.

THE UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA.

We have received a copy of a circular containing correspondence with regard to affiliation with the London Chamber of Commerce, and requesting that each Association will, at an early date, send in the name of a Planter, either now resident in England or shortly proceeding there, who it would propose to nominate to represent the United Planters' Association of Southern India on the London Chamber of Commerce,

COFFEE LAND IN BRITISH CENTRAL AFRICA.

An advertisement shows that land in the Shiré Lands suitable for coffee cultivation is being offered for sale in large and small blocks. In "The Central African Planter" to hand by the German mail we notice an article by Mr. J. Buchanan, C.M.G., on the position and prospects of coffee in which he mentions that roughly speaking there are at present 6,000 acres under coffee in Nyssaland spread over something like 100 plantations. Of these the greater number are in their first and second year, so that 1897 is looked forward to with considerable satisfaction, it being very probable that the export of coffee in parchment for that year will reach an aggregate of 24,000 cwt. Land, he says, is yet available in quantity. Notwithstanding a very marked increase in value within the last few years there is yet good coffee land obtainable at from 5s to 20s per acre.

NEWS FROM BRITISH CENTRAL AFRICA.

On pages 483-84 will be found some interesting and, alas! some very sad news from this quarter of Africa, so closely connected with Ceylon now, by planting and other ties. Pioneering as planters in a new country is, and must always be, a trying business and it is not surprising therefore, to learn of sickness and even deaths. Among the rest, Mr. J. P. Owen who left Ceylon some months ago in the service of the Nyassaland Coffee Co. has had a bad attack of fever, and has left Blantyre on his return to Ceylon; but we trust Mr. G. M. Crabbe will be able to persevere and get acclimatised like Mr. Buchanan, Mr. Moir, and Mr. Henry Brown (an old Ceylon planter). In the monthly "Central African Planter" for October, it is interesting to note the register of arrivals and departures from the infant Colony for a month as follows:—

ARRIVALS:—Mr. Jenkins arrived with Mr. Brown at Mlanje to assist in carrying on business under "Brown and Jenkins." Mr. and Mrs. Thomson for F. C. Mission Nyasa.

Per "James Stevenson"—Mr. G. M. Brable, for Nyasaland Coffee Co., Ld., Captain Bradshaw, of 35th Sikhs on furlough from India, to hunt, Mr. and Mrs. Armstrong, Mr. Lovell, Mr. Burnet, Mr. Steblecki (a younger brother of Messrs. K. S. Steblecki), Mr. Donaldson, Mr. L. A. Wallace and Mr. Clifton for Chiromo; Mr Lindsay and Mr. Fleet of Baptist Mission of Scotland.

Per "Henry Henderson"—Miss Bell for Church of Scotland Mission.

DEPARTURES:—Mr. J. P. Owen for Ceylon, Mr. and Mrs. Thomson for Nyassa.

This monthly—conducted on much the same lines as the *Tropical Agriculturist*—has an article on "Coffee: its position and prospects" by John Buchanan, Esq., C.M.G., the pioneer planter, which we shall transfer to the pages of our periodical. The one chief drawback to coffee-planting, the writer says, is want of proper means of transport: but several schemes are on the *tapis* to remedy this. An article on Mr. Moir's Lauderdale estate is also of interest: it was originally opened by Mr. Henry Brown; but the energetic proprietor has since done much for it and Mrs. Moir is evidently the right consort for a pioneer tropical planter, introducing fruit trees from Algiers, &c. Mr. Moir has cacao as well as coffee and is also interested in cattle and other stock. A third article from this journal as well as current notes we give on our back page today as of special interest to Ceylon planters.—The return of Mr. H. Brown shews he has faith in the future of Nyassaland. The total coffee crop of this year is expected to equal 3,000 cwt., the average yield so far 3 to 4 cwt. per acre. A Chamber of Agriculture and Commerce had been formed, rates being regulated by acreage of land planted or closed, or by number of European Assistants employed! The office-bearers elected for the year, are:—

President, Mr. John Buchanan; Committee, Messrs, R. S. Hunter, Mackinon, T. M. Hastings, John Gibbs, Jonathan Duncan, and Robert Buchanan; Secretary Mr. W. J. Dow.

VARIOUS PLANTING NOTES.

COFFEE GROWING AT HOME.—We notice that at a recent meeting of the Royal Botanic Society something was said about the possibility of coffee cultivation in England. Mr. Sowerby, the Secretary, had gathered some of the beans grown by the Society under glass, which he had carefully roasted, ground, and made into coffee. This decoction was submitted for the opinion of certain of the members reported to be connoisseurs of the beverage, and their opinions agreed that it was "excellent in every respect." A reference was made to the cultivation of a plant which "may ultimately help in some degree to cheer and brighten the existing depressed state of agriculture." Possibly this was meant for poetry. We feel sorry for the poor agriculturist in England who thinks he can cultivate coffee successfully. The Ceylon planters could give some useful information on the subject.—*H. and C. Mail*, Dec. 6.

PUSSELLAWA PLANTERS' ASSOCIATION.—The minutes of committee and general meetings which we publish elsewhere show that the affairs of the district are being very closely looked after by the Association. The business transacted had reference to roads, bridges, tolls, hospital accommodation, and postal and telegraphic communication. It is to be hoped that the P.C.M O. will see his way to accede to the request of the Association in respect of a conveniently-situated and suitable building as an hospital. The resolution of the Dikoya Association with regard to the labour question was disapproved, and we think there will be very general concurrence in the opinion of the Association that any further interference on the part of Government in this matter is undesirable. The estimated tea crop for 1896 is 5,849,000 lb which, deducting the crop of three estates not included last year, is an increase of 348,250 lb.

CEYLON NOTES FROM NYASSALAND.—Coffee appears to be doing well in Nyassaland, and crops have so far come up to expectations. I note of late several men have come into the country, though more so for the purpose of prospecting for gold than for planting coffee, Mr. Henry Brown, formerly of Ceylon, has lately arrived, having been home for the purpose of floating a large company in Portuguese territory. Mr. Percy Owen, whom doubtless your readers will remember as having left Ceylon of late has, I am sorry to record, been exceedingly ill with black water fever, and, in consequence, had to leave the country to recoup his health, and has, I believe, gone South. Black-water fever seems prevalent throughout this part of Africa, Mr. Fotheringham, the manager of the African Lakes Company, and another gentleman in similar employ, having died from it lately; also Mr. Miller, late of the Agras. Mr. Lloyd, formerly of Ceylon, and now Surveyor-General to the Administration, is, I hear, leaving shortly for England for a trip. Mr. Mortimer Crabbe has just arrived from Ceylon to take up the appointment as manager of the Nyassaland Coffee Company, and starts for Milange almost immediately.—*Cor.*

CEYLON AND NYASALAND.

Since the arrival of Mr. Brown, but perhaps more especially since Mr. Carson's visit, Ceylon has been, to judge from its newspapers, greatly exercised over the planting possibilities of Nyasaland. Reports, more or less accurate, have been published and extravagant statements duly commented upon while every little straw has been regarded as a weather-cock. On the whole, however, opinion seems to be favourable as regards our coffee enterprise seeing that a Ceylon Company has been formed to develope the land which Mr. Carson purchased at Mlanje.

In a leading article in the *Ceylon Observer* the subjects of coffee-planting and health are discussed with special reference to our Commissioner's last Blue-book from which large quotations are made. It appears that H. M. Commissioner asserts that coffee bushes here bear only on their primary branches, that secondaries for some reason or other do not develop, and that after a time the bushes have to be cut down. This official dictum has naturally somewhat nonplussed our Ceylon friends and they refer to these "authoritative utterances" as "rather perplexing references" and note that it "is passing strange to us, now we have gone into the matter, that we can find no reference to the absence or failure of the second crop, or to the non-appearance of secondaries, in any other writings from Nyasaland."

It would, on the other hand, be passing strange to *us* if they had met with such references, for, with all due deference to our Commissioner's opinions, his statements are entirely misleading.

Undoubtedly the primaries have a tendency to bear too heavily as is the case in all hot, dry latitudes, and owing to ignorance have occasionally been allowed to bear such a crop as to kill themselves, but such phenomena are well known in most coffee countries. Undoubtedly, too, the old practice of allowing the trees to grow six feet high before topping has produced long bare trees with most of the green wood at the top, but such a practice is now exceptional. On the other hand secondaries not only grow but bear crops and tertiaries too as may be seen on any average coffee estate in the country. In fact the growth and development of the coffee tree in this country are quite normal, only with our small rainfall it requires very careful handling.

For like reasons some of the bushes have had to be cut down on the oldest estates, one instance in particular being due to overforcing the maiden crop. The cutting down of bushes is however not the practice and we hope never will be. At Zomba and Blantyre there is coffee of over eight years of age still bearing and if such is the case in our two dryest districts and with pioneer methods, the chances are that, with our improved methods of cultivation (especially in the wetter districts), the results will be eminently satisfactory.

A Ceylon planter who lately visited this country has given us an exceptionally bad character as regards health. He really believes the death-rate is as high as 20 per cent! and calls Nyasaland a country of "sudden death." On the subject of health we are at one with H. M. Commissioner in the summing up as given in his Blue-book in which he points out, "that the only malady to be really dreaded is Black-water fever." Even in the case of Black-water we believe that if all the cases could be at once put into the hands of a competent Doctor the mortality would be much less. In the cases which have had proper treatment and in which the termination has been fatal (very few) it has usually been so because the constitution of the patient had been abnormally run down either by a too prolonged residence, or, by over-exposure and exertion with insufficient nutrition. This is a subject on which Dr. Robertson might give us the benefit of his experience, meantime we would only remark that it is self-evident that, in a new country like ours, no one should come here who has not a sound constitution and who is unwilling to take due care of his health. In passing we may further remark that we were informed by an ex-Ceylon planter that the fevers here are not nearly so severe as those of the Ceylon low-country, and that the heat at about 2,000 feet elevation here is as nothing compared with the heat at the same elevation in Ceylon. In fine, past experience has shewn that there is nothing in the climate of B. C. A. to deter planters from taking up land as freely here as in other tropical lands. As the Commissioner remarked to an interviewer when he was at home—if a man who has a good constitution, takes care of his health, and avoids alcohol there is every chance of his standing the country.

The chief difficulty which a Ceylon planter will encounter is the unsatisfactory state of the labour. Accustomed to coolies under long contracts he will be naturally somewhat non-plussed when he finds that the longest term for which he can contract labour is one year and that the usual term for which labourers contract is six months. So far as the drudgery of estate work is concerned this difficulty could be borne with, but, when it comes to the operations of pruning and handling and such work requiring skill, the full force of the evil will be felt. This is a hindrance which we trust our Commissioner will remove and one on which an expression of opinion by planters is desirable. It must be evident that, unless the difficulty is removed, the coffee industry will be severely crippled.

Another point, in which the conditions here are different from those in Ceylon, is the great isolation of estates and the want of what are called the amenities of civilized life, to which may be added one of the necessities of life anywhere, *viz*, a good cook. These however are difficulties which are disappearing with the development of the country. With the extension of the cultivated area, a railway, and a greater influx of capital, the conditions of life here will greatly improve. By careful study of our meteorological records, by well directed experiment, and by adopting the best methods of cultivation, it ought to be possible so to master the conditions of coffee planting here as to place it on a permanent basis.—*Central African Planter.*

THE UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA.

The following is the Report of the Deputation of the United Planters' Association of Southern India on the matter of the address that they presented to the Viceroy while at Madras:—

"The Deputation had a gracious reception from His Excellency, and from the tenour of his reply we do not consider that any further action need be taken.

As regards advances His Excellency, in his reply, referred to the correspondence that has lately taken place in connection with this subject in the Public Press, and alluded to the fact that there seemed to be some divergence of opinion as regards the necessity of advancing. We, as representatives of the United Planters' Association of Southern India, consider that some form of advance is absolutely necessary, and we cannot but regret that an irresponsible correspondence should have attracted the attention of His Excellency to the detriment of the interests of our community.

His Excellency did not allude to the subject of Extradition, but we infer that this matter is to be dealt with by the Committee of Inquiry which he proposes to institute.

With regard to coffee-stealing, His Excellency deprecated the idea that the Government of India had any sympathy with thieves, and at the same time alluded to the fact that his Government had not fully appreciated that we merely wished to protect what was in fact a product in its transition state between the producer and consumer, and was not in reality an article of consumption.—*Madras Times*, Dec. 19.

TEA CULTIVATION IN ASSAM.—At the end of last year the number of waste-land grants taken up in Assam for the purpose of tea cultivation was 8,169, of which the total area was 1,013,756 acres.—*M. Mail.*

NYASSA: PLANTING AND PERSONAL NEWS.

Mr. Hunter of Cholo hopes to have 200 acres under coffee before the end of the rains. Mr. Mitchell is opening up at the Namiwawa stream near the Namadzi.—The A. L. C. are starting a cattle station at the north end of Chiradzulu. Mr. Lloyd intends going home soon. Mr. R. R. Stark leaves for home immediately.— Mr. D. J. Morkel is opening up an estate at Chiradzulo. It is called the Fort Roberts Estate and consists of about 600 acres. He intends rearing stock and growing wheat, barley, etc. Mr. J. P. Owen has left for Ceylon; after his severe illness he considers this a "no white man's country." We regret the death of Mr. J. G. Innes, of the A. L. Corporation, Ltd., who died at Mandala on the 6th September. He was only a few months in the country, and what makes his death the sadder was his parents' unwillingness that he should come to this part of Africa. Capt. Cavendish and Mr. Gordon Cumming have returned to Zomba; Corp. W. Fletcher has gone to carry on the further making, of the road.—Capt. C. F. Beeching has left Mikolongo and arrived at Blantyre; he is we understand, superintending the construction of another new road, running from Sharrer's road towards Cholo—The A. L. C. are now issuing English money from their Banking and General Departments; the natives are rather dubious about accepting half-crowns, or other large coins, but will no doubt learn in time, as they had to do with the rupee.—We are sorry to learn that Mr. W. A. Morman of the A.L.C. plantation Rivi-Rivi has had an attack of Black-Water Fever, assistance was immediately sent to him.—Sir John Kirk; whose name is so closely connected with this country, has been deputed to enquire into the recent troubles with the Brass natives.—Coffee is said by Captain Williams to grow almost wild at Uganda and on the islands of the Lake Victoria Nyasa.—Fowls cost eighteen-pence each and eggs two-pence each.—The A.L. Corporation's oil-press at Karonga's is now in working order. The yield at present is about three buckets *per diem.*—Mr. Hasting's crop amounted to ten tons. Mr. Steblecki's to four tons, and Mr. McPherson's to five tons. Mrs. Watson of Mandala lately performed the journey from Mandala to the Mlanje Mission Station in nine and a quarter hours actual travelling with two relays of machila men.—*Central African Planter.*

PLANTING AND PRODUCE.

BROKEN AND DUST TEAS.—The following circular has been issued by the Indian Tea Association (London): "With reference to the packing of broken and dust teas, it is pointed out for the information of members that it is desirable, owing to the weight of these descriptions of teas, to pack them in half-chests either of metal or of well-made and iron-hooped strong wooden packages. The use of canvas coverings is objectionable. They not only serve to hide the condition of the packages, but probably less care is taken in handling them in transit, besides which any tea which might escape into the canvas would soon become unfit for use."

INDIAN TEA IN AMERICA.—Messrs. Reid, Murdoch & Co., of Chicago, who are well known for their enterprise in pushing Indian tea in America, have had an interesting exhibit of tea at a large industrial exhibition held at Milwaukee. We observe that the *Sentinal*, a Sunday paper published at Milwaukee, contains an illustration of the exhibit, and mention is made in the letterpress of the famous World's Fair Indian Teas—viz., "Light of Asia," "Star of India," and "Lalla Rookh," of which Messrs. Reid, Murdoch & Co. have exclusive control.

TEA CHESTS AND THE TIN PLATE TRADE.—The Welsh tea dealers and grocers are very interested in securing a more extensive use for tin plates in the manufacture of tea chests, and thus benefiting their local industries. At a special meeting of the Swansea Grocers' Association held last week the president said, as though it had quite hurt his feelings, he had recently received a consignment of chests, and he was greatly surprised to find that they were made of steel which was neither manufactured nor coated in the neighbourhood. The movement, which had recently been initiated for utilising tin in the manufacture of chests for tea, was one which might result in a great increase in the trade of the town, and he hoped it would be enthusiastically taken up. Another speaker, who felt that the tin plate trade of the district was suffering from neglect in the matter, said that for a number of years he had been agitating for the use of tin in the packing of tea, because he believed it would create an immense demand for tin plates, which would mean increased trade to the neighbourhood in a number of directions. He thought the subject was one of special importance to the grocers of Swansea, for it was to their interest to get a chest that would preserve the tea and give little trouble. This result was secured by the chests which had recently been supplied to Mr. James Jones, Mr. Gale, and Mr. Iles. He had seen the chests, and, as a practical assorter, he knew at once that the roughly-coated plates out of which they were made were not manufactured in Wales. He had also seen and obtained some information from one of the directors of the company who supplied the chests. Feeling that the matter was one of importance to South Wales, Mr. Thomas Phillips, of the Tinplate Workers' Union, and himself paid a visit to the works at Glasgow last week, and ascertained from the inventor, who was also the manager of the concern, that the coated steel which formed the sides of the chest was in the first instance supplied as black plate from Coatbridge, and coated by the inventor himself, but that arrangements were subsequently made for obtaining the sheets from Belgium and coating them at Worcester. It was most unnecessary for him to make further comment, for it must be clear to everyone, from what he had already stated, that for the want of a little enterprise the trade which should be their own was presented to a foreign firm. He felt that this was the more to be regretted, for there should be no difficulty in producing a better and cheaper sheet in the vicinity of Swansea. But this was not all. They found the chest company preparing to do their own coating, a Welsh patent not having been already set up. It had occurred to Mr. Phillips and himself that if at Glasgow tin plate was successfully coated and used up, with coals cheap and a plentiful supply of steel, this might be the beginning of a competition between Wales and Scotland which might prove more disastrous to the Welsh tin-plate trade than American competition. He was, therefore, glad to attend that meeting of the grocers of Swansea in order to call early attention to the matter. In concluding, he expressed the hope that Swansea people would take the matter up with the view of inducing the chest company to construct the works they were contemplating at Swansea, which ought, he thought, to be its natural location.—*H. and C. Mail*, Dec. 6.

COMPARATIVE HEIGHTS OF DIFFERENT ESTATES IN B. C. AFRICA.

The writer of this note, having during the course of busness to visit various estates, has jotted down the different heights of the places named as given by a pocket aneroid. In the following list the Residency, Zomba, is taken as a standard and denoted by the amount of rise being denoted by plus, and the amount of fall by —, before the figures. By combining these figures with 2,968 the height of the Residency, a rough idea of the actual height of any of the places named may be obtained. Needless to say the figures given are only approximations and differences of weather and temperature have not been accurately discounted for.

The Limbi Estate plus 550; Upper Mudi Estate plus 550; Chipande Estate plus 300; Blantyre Estate plu 250; Nkawa (Cholo) plus 100; Mwalandnze (Cholo) plus 50; Lunzu Estate plus 50; Zo a 0; Namadzi Crossing 0; Mlanje Mission — 250; Midima Resthouse— 400; [Mlanje Road]—Mr. Simpson's Ho.— 450; Mombesi Crossing — 550; [Mlanje Road]—Songani Estate — 600; Mr. Bradshaw's Ho. — 650; Mr. Moir's House — 650; Mr. Bradshaw's Estate [lowest] — 950; Mr. Simpson's Estate [lowest — 1000; Mr. Moir's Estate (lowest) — 1000.—*Central African Planter.*

A NEW CEYLON TEA COMPANY.

The Ederapolla Tea Company of Ceylon, Limited, has been registered, with a capital of £50,000 in 5,000 shares of £10 each. The company has been formed to purchase from Messrs. Bett and Watt, Ederapolla Estate, and from Mr, MacMartin, Ardross Estate, both properties being situate in the Kelani Valley District, Ceylon. The directors are Messrs. James Bett, Ederapola Estate, Ceylon (vendor); J. M. MacMartin, Ardross Estate, Ceylon (vendor); G. W. Paine, Chairman of the Kelani Valley Tea Association, Limited; and R. Porter, Maskeliya, Ceylon, managing director of the Kelani Tea Association, Limited. The secretaries are Messrs. Lyall, Anderson & Co., of 16, Philpot Lane, E.C.—*H. & C. Mail*, Dec. 6.

A MONSTROUS PAPAYA.

At the last meeting of the Asiatic Society of Bengal, Dr. D. Prain exhibited a monstrous papaya, which, he explained, was an excellent example of a fruit within a fruit. Of this condition there may be two explanations. An adventitious fruit may occur within the ovary so as to occupy the position usually occupied by a seed. This is by no means an uncommon occurrence. But here was a different phenomenon. Inside the perfectly normal looking fruit has a second, about half its length, quite unconnected with the carpels of the ordinary pistil, and arising from the axis of the flower within the normal ovary, and therefore above the point of attachment of its parts. The edges of the carpellary leaves of this second ovary were more or less free, except at the base; through the interstices could be seen a third ovary proportionately smaller but rather more approaching the normal ovary in appearance and structure, owing to its component carpels being united, except at their tips. This third ovary was as free from the second as the second from the first. It occupied apparently the very extremity of the axis of the flower.—*M. Mail.*

INDIAN TEA IN AMERICA.

MR. BLECHYNDEN'S OPERATIONS.

The following are extracts from a letter dated New York, 13th October 1895, from Mr. R. Blechynden to the Secretary of the Indian Tea Association:—

On page 3 of my letter of the 29th July, under the head "in the week ending 13th July," I referred to an arrangement I was trying to make with grocers to use their cards for distribution through Mrs. Tipton in the course of her work, and getting them to give a reduction on the tea purchased within fixed dates by those presenting the cards. This arrangement was carried out with several men.

In all some 54 stores covering New York, Brooklyn and a few in Jersey city. The cards were used chiefly in connection with the *Tribune* (newspaper) fund for Fresh Air Excursions, referred to in my previous letter on this subject. The excursions went out regularly during the summer, and Mrs. Tipton accompanied the greater number of them.

I enclose a cutting from the *Tribune* summarising the operations of the season. In addition to the *Tribune* excursions some of the others were served, as for instance the 1st of August, the people's Tabernacle excursion, when. 1,272 souls were on board, including 503 women, of whom some 300 were served. There was also a coloured people's excursion, when I gave Mrs. Tipton the assistance of some coloured girls, and she superintended the serving. This was on the 9th August.

On the 8th August there was a convention of Total Abstainers held in the Empire Hotel, a great demonstration, including a parade through the city. Delegates attended from distant parts of the country. By some arrangement, permission was obtained to serve tea to the women delegates in their Committee room; it would have been impossible to serve the general meeting. Some 76 of these influential ladies were served, and also the men who were transacting business with them, and samples of the tea given to all present in the sample tin boxes over from the World's Fair.

As stated in a previous letter, I took advantage of a special opportunity which occurred to send a demonstrator to a country fair of some local importance at Newburgh. A firm of wholesale grocers at Newburgh, doing business all through that section of the country, applied to the Indian and Ceylon Tea Cos. for assistance to demonstrate teas at the Fair. They were referred to us, and as Mr. Mackenzie agreed to pay half the cost, I sent one of the ladies we have trained there, and the tea was supplied in packets by the India-Ceylon Company. The demonstrations proved successful enough to lead the firm in question to send an order for another 400 pounds, but the order was neglected, and I cannot say what the result will be. The Firm whom Mr. Mackenzie and I had an interview with when we went to the Fair, said that they intended pushing the tea through their travellers and looked to getting a good trade in it. The Fair was visited by thousands of people, and was quite a large affair. Regular buildings were put up for the accommodation of the exhibits, and our friends occupied an entire building.—*Indian Planters' Gazette*, Dec. 14.

VARIOUS PLANTING NOTES.

COFFEE.—The National Bank together with Messrs. L. Behrens Sons, in Hamburg, have purchased coffee plantations in Guatemala, the last year's crop of which amounted to 18,000 quintals. The purchase sum is reported at 4¼ million marks. It is stated that the fifth part of the coffee plantations in Guatemala are now owned by Hamburg parties, and about one-half of the Guatemala crop comes to the Hamburg market.—*Planters' Gazette*, Dec. 1.

PRECIOUS STONES IN CEYLON.—It is news to us to learn from Mr. Siedle (who has long been an expert in respect of Ceylon gems) that the country in which our moonstones (an attractive form of adularia) are now found, is between Matale or Ukuwala and Teldeniya in the Dumbara Valley. The natives often tunnel considerable distances and, in their blasting, sometimes break up valuable pieces; for, the moonstones that are in request now, are pieces large enough to be cut and engraved in cameo-fashion. One such piece found on Crystal Hill estate, Matale, was of considerable value. The tiny stones are at present plentiful and cheap, a brisk demand from America some time ago having been oversupplied. The moonstone is really a very pretty stone, though not to be compared for a moment in value with our rubies, sapphires, cat's-eyes, or alexandrite. Ceylon rubies, however, are going out of fashion, being eclipsed in colour by those from Burma and Siam. But in sapphires much business in a quiet way is still done, and Mr. Siedle is able to tell us of really valuable finds by the natives in Sabaragamuwa—single stones up to R1,000 R1,250, and R1,500 in local value. Alexandrite, again, usually found in the Matara District and near Weligama, is much in request and a good many natives are keenly after it. Altogether, the mining and trade in Ceylon gems is by no means played out; but is as active as ever though there is no great show about it.—Mr. Siedle is, with justice, looking forward to the opening up of the Bambarabotuwa division of Sabaragamuwa as likely to bring more valuable gems into the market. In early days, this was a favourite scene for gemming; but natives do not care to work in dense forest. There is also a report of successful gemming having been lately begun near Hanwella, 20 miles from Colombo.

"THE TREATMENT OF TEA IN THE LONDON WAREHOUSE."—Under this heading we publish elsewhere a letter from Messrs. Davidson & Co. which contains good news for planters in regard to the treatment of their tea in re-packing in the London Warehouse. The example has been set by Messrs. Wrightson & Co. of the Trinity Bonded Tea Warehouses of securing a complete outfit of Messrs. Davidson's Tea-packers to do all their re-packing work, and we have no doubt that other firms will soon follow, so that, as the letter remarks, "there is every prospect of the objectionable 'treading in' process being entirely abolished in the near future."

CEYLON TEA IN AMERICA.—Our Tea Commissioner to America in the course of a letter to us remarks:—"I see you lately said I was subsidising favorite firms. You are right, but not as you mean it: favorite, because willing, in consideration of a little assistance to handle our teas, and use their organization to push them." We meant the term in no other sense: certain firms had got at the Commissioner or he had got at them. There are, no doubt, scores more in the United States willing to do the same, who never got the chance or heard of the arrangement. The fair thing all round is to advertise in the interests of all, and we were much struck the other day with the remark of a Colombo merchant (Mr. A. Forsyth) as the result of his observation during a recent visit to America, namely that the one thing to do in the United States for Ceylon tea is—*to advertise.* This bears out our own advice from the very beginning, and we are glad to recognise how much Mr. Mackenzie has done and is doing in this direction.

INDIAN PEASANT SETTLEMENTS.—We are in receipt of a memorandum containing the brief outline of a scheme which "General" Booth proposes to launch during his approaching visit to India. He proposes to ask Government and the Native States for say 50,000 acres of land in suitable blocks free of taxes for five years. On this land it is calculated that 10,000 families (or 50,000 people including children) can be settled, but it is proposed to begin with only half that number. The capital expenditure required for commencing operations, breaking up the land, sinking wells, building houses, buying cattle and settling first colonists is estimated to be about £50,000 which it is proposed to raise in donations, in loans from private sources and bearing interest at 3 per cent and repayable within a given term of years, and in loans from Government under the Takkari or agricultural loan law. Connected with each colony there will be an agency for acquiring waste land near the over-populated towns and villages. These tracts, it is said, will be cultivated by means of the labour of the adjoining villagers, thus saving all preliminary outlay for houses, wells, support of colonists, &c. It is also proposed to establish an agency for making loans on easy terms as the go-between for Government in obtaining loans for the depressed classes under the Takkari law, as the agents for banks and others desirous of investing in this way at a fair rate of interest, and on the co-operative village loan system. Another prosposal to establish agricultural schools in course of time. This, in brief, is the scheme which the "General" proposes to launch upon us. It looks well on paper and has, we believe, been "generally approved" by leading English officials and others, but our own opinion is that the Salvation Army have not qualified to undertake Indian Administration in this way or to do better for the people than the Government does.

INDIAN TEA IN AMERICA.—The *Indian Planters' Gazette* publishes extracts (which we will reproduce later on) from a letter by Mr. Blechynden to the Secretary of the Indian Tea Association in which he mentions the success which had attended an arrangement he had tried to make with grocers to use cards for distribution and getting them to give a reduction on the tea purchased within fixed dates by those presenting the cards. The arrangement was carried out with several men—in all some 54 stores covering New York, Brooklyn, and a few in Jersey City. He also refers to co-operation between Mr. Mackenzie and himself.

THE KELANI VALLEY TEA ESTIMATE.—Mr Coles, the Honorary Secretary of the Kelani Valley Planters' Association, has kindly supplied us with the following corrected figures of the estimated crop for 1896 as compared with 1895:—

	Yield.	Acreage.
1895 ..	9,942,000 lb.	23,188
1896 ..	11,715,000 ,,	26,606
Increase ..	1,773,000 lb.	3,418

Yield per acre is 530 lb.

The District shows an addition of 3,400 acres of tea for 1896.

PLANTING IN UVA.—This has been a very bad season for planting in Uva to judge by the following from a Haputale planter:—

"Your correspondent from Bandarawela was about right the other day when he said that a good deal of this season's planting would have to be replanted again. October planting—those who were lucky enough to get their planting done then will be all right. Plantings since then have been most disappointing—a couple of showery days and then ten scorching hot ones. Christmas usually can be depended upon for some rain. Today has blown a hot, dry, strong wind all day, and no indication of the much-needed rain. Truly we are in one of the late R.B.T.'s dry cycles."

DR. MORRIS, C.M.G., OF KEW.—This mail brings us a letter from Dr. Morris in which he mentions:—"I am just off for a winter trip to the Bahamas, to look up things there." We are sure to have an interesting paper on these islands as the result of this trip, similar to that written about the Canary Islands. Dr. Morris, in asking for some missing numbers of this journal is good enough to say:—

"I find on looking over my file of the *Tropical Agriculturist* that I am wanting the monthly parts for July and August 1895. As I have a complete set of this interesting and valuable work from the beginning I would esteem it a great favour if you would kindly send me the parts above mentioned."

In the *Gardeners' Chronicle* we find the following notice of Dr. Morris' last course of papers now published as a volume:—

VEGETABLE FIBRES.—Dr. Morris's lectures on this subject before the Society of Arts have now been republished in a complete form, and may be had from the Society of Arts, Adelphi, London. They present within small compass a readable account of the nature, properties and source of vegetable fibres generally. On looking through this excellent summary, the reader will be struck with the small number of species which have, up to the present time, been utilised. This is the more astonishing, as the great majority of plants yield fibre in some form or another. Is there not here an opportunity for our botanical stations to institute, on a far larger scale than they have hitherto done, comparative trials of various fibre-producing plants, in order to ascertain which are of the most commercial importance. In the mean time we commend the present publication to the notice of all concerned.

Ceylon is a paradise for fibrous plants, and much could be done in developing trade and in cultivating the best kinds, if "tea," "cacao" and "palms" did not absorb capital and enterprise so completely.

Correspondence

To the Editor.

A PRACTICAL QUESTION ABOUT TEA SEED: ITS GERMINATION AND GROWTH.

Dec. 12.

DEAR SIR,—I would be much obliged if you or some of your readers would inform me how it is that a large percentage of seeds which turn out sound in Colombo, and even on the estate when tested in water, never come to any thing; many of the seeds turn mouldy on the outside after being in the germinating beds a few days.

Is this due to any defect in the *mode* of germinating or not? And would a greater percentage turn out good if the seeds were spread out *each* on the ground and covered with light earth, in preference to the general method of germinating layer above layer with earth between? The above applies largely to Indian tea seed.—Yours faithfully, 'ENQUIRER.'

[We shall hope to have the opinion of the Acting Director of the Botanic Gardens and of some old planters on the question raised?—ED. *T.A.*]

A CACAO PLANTATION YIELDING 19½ CWT. OF CROP PER ACRE IN FERNANDO PO.

Dec. 13.

DEAR SIR,—It may interest Mr. James H. Barber whose letter I notice in the *Observer* of 11th to know that I have seen in the island of Fernando Po (W. coast of Africa) a cocoa plantation of nearly 200 acres giving 19½ (nineteen and half)* cwt. an acre. To ascertain this, I have surveyed the plantation and examined the books.

This plantation, like several others, was on the seaside and had no shade, the Forestero trees being from 5 to 8 years of age and at about 9 feet apart. The weeding of young fields, or rather a kind of sickling, was done about 4 times a year with *machetes*, light straight knives about 2 feet long, the cocoa plants receiving an extra hand-weeding of about 3 feet diameter.

The fields, from three years, had such a dense foliage that it was only necessary to cut down twice a year the scanty sheddy.

May I suggest that it might be interesting to Planters and give a fair idea of the profits to be derived from the cultivation of the main products, if in your yearly Table of Exports you added the approximate acreage in bearing and the average Colombo price. Of course account would have to be taken in the computation of the acreage, of the small holdings not mentioned in the district tables of estates of your valuable Directory.—Yours truly, A. V. D. P.

* Why not 20 cwt. at once, most planters will remark; but let it be observed that our correspondent verified the return.—ED. *T.A.*

THE COLOMBO AND LONDON TEA MARKETS:—HOW THEY ACT AND RE-ACT ON EACH OTHER.

Callander Estate, Dec. 13, 1895.

SIR,—Having read Mr. A. H. Thompson's reply to "Upcountry," I wish to ask him two questions. I have no intention of referring to the subject raised by "Upcountry," which is invidious, and I suspect only half believed by himself. Mr. Thompson says: "Local teas and reports are based now-a-days on local prices and demand, and have now-a-days very little to do with the home market."

This is one of the chief arguments used by all Colombo brokers to induce proprietors or their agents to sell in Colombo. But I would ask Mr. Thompson and his brother-brokers,

1st.—How is it that the local market rises or falls with the London market? "Market up" or "market down" in the weekly report from the Lane, is the almost sure signal for a sympathetic rise or fall in the Colombo market.

2nd.—What does Mr. Thompson say to this? About two months ago (when the first severe drop occurred in Colombo) valuations were received by wire, by certain buyers, of samples of teas (my own amongst them) sent home for that purpose, which led them to believe that they had been given too high a price for them. The immediate consequence was a fall of from 1d to 2d per pound for high grown teas. I by no means attribute the whole fall since then to that, as I am painfully aware that the late weather has not been conducive to good manufacture, but that was the cause of the first fall (acknowledged by brokers), and I do know this, that this was in my case on teas valued by my brokers as highly as those which fetched 3d per lb. higher average the month previous.

If local prices have so little to do with Mincing Lane, what reason had those buyers in sending samples of certain teas to London for valuations, and why was the adverse report followed so immediately by a drop in prices?

I acknowledge that the arrival of a large order from Australia gives a temporary lift to local prices, and that these may even be for some period ½d a lb. higher than in London; but experience proves that the Colombo market *is* ruled very considerably by the reports from the Lane. If it is not affected by the Lane and if it is usually higher (as asserted), how is it that there are so many speculators on our market, who buy to resell in the London market? I have not heard that any of them have gone "stony broke" yet.

Apologizing for the length of this letter,—Yours faithfully, GEO. H. GREEN.

REPLY TO "ENQUIRER" *RE* TEA SEED: ITS GERMINATION AND GROWTH: NO. I.

SIR,—I have this year germinated and planted out 12 maunds of tea seed with not more than 2 per cent failures. The seed was germinated in the usual way between layers of *river sand* in a dark room, and planted out when about an inch sprung. Mouldiness is the result of the death of the germ, probably caused by the drying up of the essential oil. Water is no sure test of good fresh seed. A seed may sink and yet be defunct, may float and yet grow. "Seed spread out on the ground and covered with light earth" ought to germinate all right, but river sand is preferable to earth.—Yours, &c., S.

No. II.—*RE* INDIAN TEA SEED: THE TESTING OF SEED IN ANSWER TO "ENQUIRER."

DEAR SIR,—The water test in itself is not a safe one to be guided by in determining the percentage of good or bad seed, as perfectly rotten seed will sink.

Several hundred seeds should be broken and carefully examined as even when the kernel seems sound enough though somewhat "cheesy," if the germ looks sloughy, it is in all probability dead, and the seed should not be classed as in good condition.

Doubtful seed stands a better chance of germinating if spread thinly in damp sand or charcoal dust two or three layers deep only, than if placed in deep pits or boxes, as fermentation then sets in rapidly and the seed rots.

"Enquirer" 's seed had very likely suffered from over-fermentation already on its way down from Calcutta.—Yours truly, OLD TEA HAND.

THE COLOMBO AND LONDON TEA MARKETS.

Dec. 18th.

DEAR SIR,—Mr. Thompson's little anecdote of the returned buyer is interesting and instructive, and I doubt not that he has already taken advantage of the 3d drop since that Wanderer's departure from the atmosphere of fog and smoke. True, I ought not to have used the word "ruled"; I only meant "affected" as throughout the letter. Well, if Mr. Thompson's contention is right and the Colombo market is not affected by London advices, then those adverse valuations quoted in my letter should not have been followed by a drop here; the Colombo buyers should have nobly and generously shut their eyes to such a trifle as a London report. But they did not, there's the rub: something wrong there! I will not deny Mr. Thompson's allegation there is an advantage in selling locally, for by doing so myself I own to the fact. Money is turned over quicker for one thing, and there *are* booms when large orders with high limits arrive from the cities of the world, but such do not flow in steadily all the year round; I wish they did.—Yours faithfully, GEO. H. GREEN.

THE PACKING OF TEA FOR THE LONDON MARKET.

Kandy, 18th December 1895.

SIR,—At the request of the Committee, I enclose for publication for the information of the Planting Community, copy of letters received from the Ceylon Association in London. I am, sir, yours faithfully, A. PHILIP, Secy.

Copy.

4, Mincing Lane, London, 11th October 1895.

A. Philip, Esq., Secretary, Planters' Association, Kandy, Ceylon.

DEAR SIR,—I am instructed by the Tea and Produce Committee of this Association to forward to you for the information of all concerned in Ceylon a copy of letter dated 8th instant from the Secretary of the London Wholesale Tea Dealers' Association, and to say that the Committee agrees in the opinion that 170 lb. is too great a weight for a chest of Tea. I am also to call your attention to the reports that continue to come in from the London and India Docks Joint Committee of Packages of Tea arriving in London, the chests externally sound, but the weights of tea deficient. I annex particulars of reports that have lately reached me.

30	May,	Norwood, ex Nubi		1 chest,	30	lb.	short
22	June	½ chest ex P. & O.		steamer	16	,,	,,
6	July	Bittorne	do	chest	6	,,	,,
		do	do	,,	4	,,	,,
10	,,	Damblagalla	do	,,	12	,,	,,
		do	do	,,	15	,,	,,
11	,,	Mariawatta	do	,,	6	,,	,,
	,,	do	do	,,	8	,,	,,
1	Oct.	Lagalla ex	Glenesk	,,	10	,,	,,
	,,	do	do	,,	12	,,	,,
7	,,	Dinegama, Senator		chest loss	not	given.	

All these are reported as apparently, "country plundered" and in most cases "canister cut." It is to be noted too that all deficient packages contain either Pekoe or Orange Pekoe.—I am, dear sir, yours faithfully, (Sgd.) WM. MARTIN LEAKE.

Copy.

London Wholesale Tea Dealers' Association, October 8th, 1895.

Wm. Martin Leake, Esq., Secy., Ceylon Association.

DEAR SIR,—Messrs. Appleton, Martin and Smiles bought recently 8 chests Ceylon dust and find by the weight notes that they were 170 lb. net.

They consider a package containing so much dust as this is very likely to leak when sent by rail; and as the weight is unusally large for chests, they wish me to draw your attention to the circumstance with the view of preventing a recurrence.—Yours faithfully, (Signed) R. SEDGWICK.

Copy.

4, Mincing Lane, London E.C. Nov. 22nd, 1895.

A. Philip, Esq., Secretary, Planters' Association, Kandy, Ceylon.

DEAR SIR,—I am requested by the London Tea Brokers and Wholesale Tea Dealers' Association to ask you to be good enough to draw the attention of those packing Tea for the London Market to the serious loss and inconvenience which arise from dust Teas being sent in packages not properly protected against leakage and to suggest in the mutual interest of both seller and buyer in London that it is desirable that such packages should be canvassed or otherwise protected before being shipped.—I am, dear, sir your faithfully, (Signed) WM. MARTIN LEAKE, Secretary.

THE TREATMENT OF TEA IN THE LONDON WAREHOUSE.

"Sirocco" Machinery Depot., Colombo, 28th Dec. 1895.

SIR,—Those of your readers who are interested in Tea will be glad to learn that there is every prospect of the objectionable "treading in" process of repacking Tea in the London Warehouses being entirely abolished in the near future. Our head office advises us by wire that they have received instructions from Messrs Wrightson & Co. of Trinity Bonded Tea Warehouses, Coopers' Row, London, to supply at once a complete outfit of our Patent Tea-packers to do the entire re-packing work in their Warehouses.

This is a much-needed reformation. Teas that have been carefully packed in the Factory will now reach the Home Market in perfect condition, without being subjected to the "tramping down" treatment in the London Warehouse with its concomitant crushing and breakage of the leaf and "greying" of the Tea.—We are, sir, yours respectfully,

DAVIDSON & CO., H. M. HARRIS, Manager.

DRUG MARKET.

QUININE.—The demand has continued of fair proportions and manufacturers are in a position to meet it. There has been considerable inquiry for speculative purposes, and 25c. was freely bid, but makers declined to sell, and no further lots of outside stock were secured. A portion of the recent speculative purchases of 60,000 ounces for foreign account has been exported by the St. Louis to London this week. The lot amounted to 21 cases, containing 13,000 ounces. The bark shipments from Java during October are reported as 1,100,000 lb. The London stock Nov. 1 was 2,069,901 ounces, against 2,896,368 ounces on the same date last year. The imports into New York have increased enormously during the past two months.—*Oil Paint and Drug Reporter.*

A CINCHONA AND CARDAMOM CENSUS.

Our Ceylon contemporary, the *Tropical Agriculturist*, has just taken its periodical census of the area cultivated in Ceylon with produce for exportation, and publishes some interesting comments upon the results of its investigations. Concerning cinchona, it is stated that in September of this year there were only 982 acres of land under cinchona alone left in the colony, but besides the trees growing on this surface there were 1,714,000 cinchona trees growing in coffee and tea gardens, the area of mixed land of this character being 5.207 acres. This latter estimate is arrived at by crediting one-third of the mixed area to cinchona. The total number of cinchona trees over two years old in the island is estimated at 4,483,000, a decrease of 2,500,000 within twenty-seven months. The coffee area, by the way, has decreased in the same time from 30,000 to 21,634 acres, while the acreage under tea, the all-devouring crop of the moment, has risen from 273,000 to 304,419 acres. There are 4,693 acres under cultivated cardamoms, slight falling-off, which is attributed mainly to the absorption of planting energy by tea-growing, which accounts for a decrease in the cultivation of many of the lesser products. Ceylon also contain 7,397 acres of land partly under coffee, tea, and cocoa, but interspersed with annatto, coca, vanilla, croton, pepper, cloves, citronella, castor oil, and aloes. The *T.A.* is naturally proud of its census, and observes with justice that "No tropical industry—and probably no agricultural enterprise outside the tropics—has had so much care bestowed on the compilation of substantially accurate statistics concerning its position and progress as the planting enterprise of Ceylon."—*Chemist & Druggist*, Dec. 7th.

THE DUTCH PLANTERS AND COFFEE IN JAVA.

The First Chamber discussed last week the Java Budget, and it was principally Mr. Pynacker Hordyk, the former Governor-General, who criticised the policy of the present Colonial Minister. In many instances there was a considerable delay, and those reforms which were introduced had long since been prepared by the former Governor-General. Mr. Muller found that the price of fl.15 per picul paid for the Governments coffee was too low, considering that fl.60 per picul was made for it, and he advised that fl.20 should be paid to the natives in future. However, Mr. Hordyk observed that if fl.15 was an injustice, fl.20 would be eqally unjust, and thus there would be no other way left than to abolish the Government coffee cultivation, the consequences of which would be so ruinous to the Treasury that plans for useful works, such as irrigation and construction of railways, by which the population is benefited, would be laid aside. In addition to this the Minister stated that in Menado the price had been increased from fl.20 to fl.25 per picul but since then not a single tree more had been planted. With regard to decentralisation, he said that no body desired it, and why should he thus make proposals in this respect? The Chamber did not enter into any further debate, and the Budget passed unanimously. According to a telegram from Governor-General of Netherlands India the Government coffee crop in Java for this year is at present estimated, at 335,700 piculs.—*London and China Express.*

AN INDIAN VIEW OF TEA COMPANIES IN CEYLON.

What the effect of this wholesale swallowing up of estates by the Company mania will ultimately be on the planting enterprise in Ceylon remains to be seen; but there can hardly be any doubt that it sounds the death-knell of the good old days, when the position of the Ceylon planter was analagous to that of a country gentleman living on his property. It cannot but be that, with the disappearance of the resident proprietor, planting in the colony will lose much of its *prestige*, and become more and more a purely commercial enterprise, and that the change will be regretted in many ways and for many reasons. The change may be gradual, but it will be inevitable if the present state of things continues.—*Madras Times.*

TEA CULTIVATION BY THE SHANS, BURMAH.

Mr. H. A. Johnson, of Maskeliya, has an interesting story to tell of his recent trip to Burmah, whence he returned this week in the ss. "Cheshire." His visit to Upper Burmah was taken to see his brother, Lieut. G. W. Johnson, of the 3rd Punjaub Cavalry, who is in command of the Upper Chindwin Battalion of the Military Police, his headquarters being at Kindat, 390 miles above Mandalay. For this out-of-the-way spot Mr. Johnson started last April, and in the course of his visit he went out several times on circuit with his brother, his travels furnishing him with a number of most interesting experiences and some fine sport. He described the country as most picturesque—all jungle, but the scenery he has not seen surpassed anywhere. Having joined his brother at Kindat he stayed with him a short time, and then, acting on his advice, he paid a visit to the district in which tea is grown; his brother accompanying him there. They reached the first tea gardens at Koiya, but did not stay anywhere till they reached Maungkan, a pretty little place on the banks of the Chindwin river. They travelled thither in a Government boat, and Mr. Johnson says he was well repaid for his visit. Maungkan is where tea is grown in the largest quantity, and having become acquainted with a headman, he was shown over the nurseries and the gardens—all of which, by the way, are cultivated by Shans. The tea grown is pretty much the same *jat* as that cultivated in Ceylon—Assam Hybrid.—and is not indigenous to the Upper Chindwin, though it has been grown there for 200 years, when it was first imported from the Northern Shan States. The planters do not go in for clearings as here; all their tea is grown in the jungle under shade. From these plants the Shans take leaf and seed, all their bushes being allowed to become seed-bearers. They pluck coarse, taking even the very largest leaves, and nearly all the leaf is converted into a pickle which they call *letpet*. This pickle is dark-red, and is by no means a bad condiment at the lunch table. How it is made Mr. Johnson says he does not know; but the pickle comes out a rich dark colour; the tea resembles ordinary tea leaf after infusion, except that it is larger than what we see here; and the leaf loses all flavour of tea. The pickle has a large sale in Rangoon, and the seed is all exported. Some of the tea bushes Mr Johnson saw were from 20 to 25 feet high. He brought away some of the bushes and planted them in his brother's garden at Kindat. The soil in the Maungkan district is perfect in his opinion for both tea and coffee growing. Later Mr. Johnson spent a long time on the river Uru, a tributary of the Chindwar, 400 miles inland from the mouth of the river, going as far up as Haungpa, which is very near the jade mines worked by the Chinese. Here he had some good fishing and splendid shooting—elephants, tigers, bison (and the Burmah bison is the largest in the East), sambur, leopards, bears, and deer being very plentiful, while one requires no license for shooting elephants or other big game. He had his first experience of big-game shooting from elephant-back in the course of his trip. Birds of all sorts are very numerous, and he had some fine snipe, quail, and teal shooting. Naturally he had some interesting experiences with the tribes on the Naga Hills and elsewhere—the head hunters and men of that sort—and he has brought back with him a number of Naga weapons. On the whole he put in a very enjoyable holiday in a country about which very little is yet known.—Local "Times."

PLANTING AND PRODUCE.

INDIAN TEA AND THE LONDON MARKET.—The position and prospects of Indian tea, from the grocer's point of view, cannot fail to interest the grower. We therefore reproduce the comments of the *Grocer* on the subject: "From whatever standpoint it is regarded—whether from the extent of its supply, the expansion of its deliveries here, or the quantity held in bond—this description of tea," says our contemporary, "undeniably occupies the leading position in the London market, and every year it takes a fresh stride towards a higher state of prosperity than before. Despite the dulness which has been reported in the market from time to time, the deliveries of Indian tea at this port during November progressed at an encouraging rate, and reached 12,146,450 lb., as opposed to 11,932,700 lb. in the corresponding period of last year, and 11,123,600 lb. in 1893, a total which excepting that of 14,492,000 lb. in May, 1890, when the new fourpenny duty first came into operation, is reputed to be the largest on record for a single month. Thus the aggregate delivery for the past eleven months is brought up to nearly 105,160,000 lb., or considerably more than that in 1893 to the present date, the amount in 1894 having fallen temporarily below the average. The imports have also been on a proportionately increased scale, embracing 102,500,400 lb. in the eleven months, against 101,515,200 lb. in the preceding year, and 94,386,200 lb. in 1893; and the stock remaining on hand on the 30th ult. comprised 45,270,950 lb., which was 1,827,950 lb above that in 1894, and 4,481,600 lb. more than in the other year."

ENLARGED DELIVERIES DUE TO REDUCED PRICES.—"There can be no doubt that the enlarged deliveries of Indian tea now witnessed are ascribable to the reduced prices which have been current within the last two months, as it has been during that interval that the commoner qualities of tea have formed so great a proportion of the supplies at public sales, and the almost forced selling of these kinds has sent much heavier quantities direct into consumption. A more convincing proof of the salutary effects of cheapness in the freer use of an article of prime necessity could hardly be produced; for it was in the spring months of the year, when Indian tea was relatively dear, that the clearances for home consumption fell off perceptibly, and now that the article has become pence cheaper the deliveries have swelled again. It is, therefore, reasonable to expect that the improvement now set in will be fairly maintained, that what is still lost ground in relation to the deliveries in 1894 will soon be recovered, and that the trade throughout will work itself into a healthier and more active condition."

THE NEW CROP.—With reference to the new crop for 1895-96, it may be mentioned that the original official estimate was for a total of 140,000,000 lb., leaving about 126,000,000 lb. available for exportation to this country, and the revised estimate, prepared on the basis of outturn to August 31st, was 138,000,000 lb. of which it was calculated that, after providing for shipments to the colonies and local consumption, between 123,000,000 lb. and 124,000,000 lb. would remain for export to Great Britain. Since then, however, it has been understood that, owing to the unfavourable weather that has prevailed in the tea districts, the later estimate will not be realised, and it is expected by some authorities that the total shipments to the United Kingdom for the whole season will not exceed from 118,000,000 lb to 120,000,000 lb, thought there are firms in receipt of telegrams from private and unofficial sources who still put the probable total exportation at 123,000,000 lb, as compared with one of 115,000,000 lb. in 1894-5; so that it is not at all improbable that the boon of cheap tea to the consumer will continue to be enjoyed.

TEA IN FRANCE.—Dijon is suffering just now from an outbreak of typhoid-fever A special allowance of tea has been ordered for the soldiers, because in France it is a popular belief that tea has curative effects in cases of fever of all kinds.

CEYLON AND THE IMPORT DUTY ON TEA.—In Ceylon the question of the import duty on tea is the subject of discussion. Though the Ceylon Planters' Association and the Colombo Chamber of Commerce have protested strongly against a movement for its abolition which has been started, some authorities in Ceylon maintain that the duty is distinctly inimical to the Ceylon tea industry and trade. The arguments on this side of the question are put as follows by a Colombo paper: "1. Is it, or is it not, the fact that Ceylon produces some of the very worst, as well as some of the best, teas under the sun? (To blend our good teas even with China or Java, much less Indian, teas would not be so bad as with some of the stuff occasionally sold in the Colombo market, and twice rejected as unfit for human food at Melbourne.) 2. Do not the Ceylon tea planters live to a great extent by the blending trade? What are all the great tea-sellers in London and the colonies but blenders? How is our tea getting into Russia but by blending? Actually, Ceylon and China teas are at present sent to London, blended there, and then sent back to Australia! Can it be said that the North Indian planters have not worked hard to make their teas known with their Calcutta and London Tea Associations? And yet, why are they not afraid to leave Calcutta an open port, although several million pounds of China teas enter there for blending? Finally, it is absurd to suppose that the grand port of Colombo is to be shut off from its legitimate trade as the port of Southern India, and as the distributing port for Australia. We are told that one solution of the difficulty is for Government to build large bonded stores for blending purposes. If so, the sooner they are built the better."

TEA CHESTS AND TIN PLATES.—The representatives of the tin-plate industry are making strenuous efforts to push their wares into use for tea chests. A paper was recently read by a Llanelly grocer before the Llanelly Chamber of Commerce on the subject. The opinions of various members of the tea trade were quoted in support of tin plates for tea packing.

THE SISAL INDUSTRY OF THE BAHAMAS.—Dr. D. Morris, C.M.G., the Assistant Director of the Royal garden at Kew, who lately visited the Canary Islands in connection with the sisal industry, sailed last week for New York, on his way to the Bahamas. There he proposes looking into the position of the sisal industry in these islands, and, as he has done in the case of other colonies, suggesting various other plants which might be profitably cultivated in a place like the Bahamas. As there is some affinity between the Canary Islands and the Bahamas, no doubt many of the plants which are profitably cultivated in the Canaries could be tried with advantage in the West Indian group.

A RAMIE PLANTING COMPANY.—The Anglo-Dutch Ramie Fibre and Paper Company, Limited, has been registered with a capital of £150,000 divided into 150,000 shares of £1 each, 100,000 of which are ten per cent. cumulative preference.

COCONUT BUTTER.—A company has just been formed in Paris to make butter out of the coconut. It has a plant calculated to produce over 4,000 lb. a day of this butter, and will soon be able to produce twice as much The butter will bo called by its namo. Tho nuts will be supplied from the French possessions of Africa. —*H. and C. Mail*. Dec. 13.

VARIOUS PLANTING NOTES.

TRAVANCORE AND THE AMERICAN TEA FUND. —As will be seen from the letter which we publish in another column, the Travancore Planters' Association has contributed R1,472 towards the American Tea Fund.

THE FIBRE INDUSTRY.—So far as the coconut palm is concerned, there are several Fibre Factories at work now. A new one is about to be erected at a convenient point on the Negombo road for ex-Inspector Harrison who is very active in developing fresh industries.

TEA SALES IN LONDON IN 1895.

Date. 189 .	Packages sold.	Butler's Average. d	Gow, Wilson & Stanton's Average. d	Wilson & Smithett's Average.
Jan. 3	9 00	10	10	10
„ 10	2 000	10	10	10
„ 17	10 0	10	10	9¾
„ 24	20000	10	9¾	9¾
„ 31	16000	9¼	9¼	9¼
Feb. 7	2.000	9¼	9¼	9¼
„ 14	16000	9	9	9¼
„ 21	12 0	9¼	9½	9¼
„ 28	11000	9	9	9
Mar. 7	22000	8¼	8¼	8¾
„ 14	29000	8¼	8½	8¼
„ 21	15000	8½	8½	8½
„ 28	18000	8¼	8¾	8¼
April 4	16000	8¼	8¾	8
„ 9	17000	8¼	8	8
„ 18	—	—	—	—
„ 25	19000	8¼	8¼	8¼
May 2	26000	8¼	8¼	8¾
„ 9	20000	8¾	8¼	8¾
„ 16	18000	8¼	8¼	8¼
„ 23	26 0	8¼	8	8
„ 30	18000	8¼	8¼	8¼
June 6	11000	8	7¾	8
„ 13	500	8	7¾	7¾
„ 21	2 00	7¾	7½	7¾
„ 27	2500	7½	7¼	7½
July 4	2400	7¾	7¾	7½
„ 11	22000	7¾	7¾	7¾
„ 18	11000	8	7¼	8
„ 25	22 0	8¼	8¼	8¼
Aug. 1	28000	8¼	8¼	8¼
„ 8	90 0	8¼	8	8¼
„ 15	26000	8	8	8
„ 22	23 0	8	8¼	8¼
„ 29	25 00	8¼	8¼	8¼
Sept 5	150 0	8⅜	8¼	8¼
„ 12	210 0	8½	8¼	8½
„ 19	14 0	8¾	8¾	8¼
„ 26	15 00	9⅛	9	9
Oct. 3	17000	9⅛	9	9
„ 10	16000	9½	9½	9½
„ 17	11000	9¾	9¾	9¾
„ 24	120 0	9½	9½	9½
„ 31	11000	9½	9¼	9½
Nov. 7	1800	9¼	9¼	9¼
„ 14	12000	9¼	9	9
„ 21	11000	9⅛	9	9
„ 28	14000	9⅛	9	9
Dec. 5	14000	9¼	9¼	9¼
„ 12	1300	9	8¾	8¾
„ 19	2000	9	9	9

The Monthly Av rages ar as fol ows:—
Jan. 9¾d., F b. 9¼d , March 8¼ ; April 8¼d: May 8¼d: June 7¾ ; July 7¾; Augu t 8¼d; Se t. 8¾d; O t. 9¾; Nov. 9¼ ; De e nber 9d Yearly Aver ge 8¾d, sa comp red with 8¾d also in 1894.

OUR TEA CROP FOR 1896.

Time was, not so very long ago, when we were very abundantly sneered at, our contemporary of the "Times" as usual leading the way, for anticipating an export of a hundred million lb. of Tea in one year from Ceylon; but now we have the same contemporary prophesying that the total export for next year is likely to be nearer 105 than 100 million lb.! No doubt the district estimates will shew an aggregate equal to this quantity; but we would suggest caution about the total estimate, and for this reason:—True, for the present year, the total exports are likely to be between 94 and 95 million lb., or 4½ million, say, in excess of the official estimates. But it must be remembered how 1894 (following on the large export of 1893) shewed little or no increase. To some extent, may not the experience be repeated, especially *if* India has a prosperous year in 1896 (as is fully anticipated to make up for the past bad season) and so forces many Ceylon planters to go in for fine plucking to make up for lower prices? We would not, therefore, estimate anything above 100 million lb. of tea for Ceylon's total export in 1896; and of this quantity we should hope not more than 85 to 86 million lb. need go to the United Kingdom direct.

TEA SEED FOR CEYLON AND LOCAL PRODUCE FOR LONDON.

The ss "Simla" from Calcutta brought on the 30th Dec. 1895 230 packages of tea seed and takes away from Colombo 600 tons tea, and 50 tons cinnamon, cutch, &c.

DRUG REPORT.

(From the *Chemist and Druggist*.

London, December 5th.

VANILLA.—The London steck at the beginnig of this month was only 370 tins.

CAFFEINE has been practically a dead letter this week. The quotations remains as given in our last report.

COCOA-BUTTER. At the monthly auctions 500 2-cwt cases of Cadbury's brand sold at a decline of about 2d per lb— viz., from 13¼d down to 1s 1d per lb.

ESSENTIAL OILS A considerable quantity of Citronella oil said to be 15 tons has been sold for shipment over four months at 1s 6d per lb, c i f in drums. The spot quotation also shows a fresh advance, the market having been cleared at 1s 8d per lb; second-hand quotes 1s 9d per lb. Oil of cinnamon leaf has become scarce and is higher, the price running from 3½d to 4d per oz.

QUININE is again lower. At the end of last week 5,000 oz. of second-hand German bulk were sold at 12⅝d per oz. and another 5,000 oz lot, of old import at 12⅞d per oz; but the quotations today are easier, a parcel being offered without guarantee of age at 12½d, while recently-made quinine is quoted 12⅝d per oz. The imports during November were 24,588 oz, and the deliveries 51,178 oz leaving a stock, on November 30th, of 2,040,298 oz against 2,840,816 oz on November 30th 1894. It is said that the lot offering at the low price mentioned above is part of a somewhat considerable quantity left behind by a deceased speculator, who paid about 1s 6d per oz for it. Bids of 12½d per oz were solicited for it today.

THE AMSTERDAM DRUG-MARKET.

Our Amsterdam correspondent writes on Dec. 4:— The exports of Cinchona bark from Java during the month of November (according to a cablegram just to hand) were again very heavy—viz. 1,264,000 Amst. lb (about 1,390,000 lb English). The total exports from the island during the eleven months from January 1st to November 30th have been:—

Years	1895	1894	1893	1892
Amst. lb.	8,193,700	8,386,700	6,951,000	5,552,000

The public sale on December 12th will consist of 5,472 bales and 210 cases Java cinchona, weighing 528,935 kilos and containing 27,685 kilos of sulphate of quinine of which about 421 kilos are contained in the 17,020 kilos of pharmaceutical bark, and 27,264 kilos (average 5·31 per cent) in the 511,915 kilos of manufacturing-bark. Exclusive of the bark to be offered at these auctions, the first-hand Amsterdam stock now consists of about 10,000 packages of manufacturing-bark. At auction on Tuesday 80 tons of Van Houten's Cocoa-butter sold at an average price of 73·53c per half-kilo. The tone of the market was irregular and generally quiet.—*Chemist and Druggist.*

PURCHASE OF A WYNAAD ESTATE BY CEYLON PLANTERS.

We hear that the sale of a tea estate in the Wynaad has been effected, Messrs. Parry and Co. having disposed of Perrindotty Estate for a good price to Messrs. de Fonblanque and Beachcroft, well-known tea planters in Ceylon. There is, we are glad to say, considerable further enquiry in that island for land in the Wynaad for the cultivation of tea.—*M. Mail.*

NORTH BORNEO NEWS OF 1ST DEC.

Mr. E. Walker, who lately went to prospect the land in North Borneo, has taken up land in Marudu Bay and has been engaged to trace the road from Little Brighton towards the tobacco estates.

Progress is being made by our old Ceylon friend, Mr. H. Walker, Commissioner of Land, with a new road he is making in Province Dent. It is now rideable for 18 miles. British North Borneo is prepared to give the grants of lands for tapioca up to 500 acres.

UVA: PLANTING NOTES BY AN "OLD HAND."

The P.W.D. seems to have abandoned the cart road between the Ginigatna Gap and Kitulgalhina Resthouse. If some of the money likely to be wasted on costly improvements to this resthouse was spent on the upkeep of the road, possessors of valuable horses would feel in better temper with this department. How much depends on the Provincial head of a department! The roads in the Central Province are so much better looked after than those in the North-Western.

TEA.—The minds of the Editors of the *Observer* and "Times" seem now to be exercised at the prospects of increasing exports, now that the 100,000,000 lb. of tea are likely to be reached. Some of us remember the fuss that was made about the 1,000,000 cwt. of coffee. Curiously enough after that figure was reached the annual exports began to tumble down. *Absit omen.*

If manuring tea was carried out extensively, I believe in 3 years our exports would run to *50 per cent* more than at present.

There can be no gainsaying the fact that *1895* has been an exceedingly good year for the Ceylon tea farmer. His Indian brother has not been so fortunate.

VALUING ESTATES.—8 years' purchase seems now to be the ruling figure for good lowcountry, and 10 years for good upcountry, estates. Does it ever strike the buyer at these figures whether the estate he purchases will be worth the same amount of money at the end of that period?

LABOUR.—It seems to be taken for granted that the Tamil labourer of today is not the man, woman, or child he or she was some 15 years ago—and the writer of the "Paper on the Labour Question" printed at the *Observer* Office, has, in some arguments he advances, like "Homocea" touched the spots.

LARGE COAST ADVANCES.—Withholding of monthly payments, no doubt at the instigation of interested kanganies, and the habit our assistants have got into of putting their labourers ½ day instead of remaining in the field and making the labourers do their work—this last pernicious habit reduces the balance due to coolies on pay-day, and, as the writer of the pamphlet says, "the coolies have become regardless in respect to their balance wages."

THE COFFEE TRADE.

The coffee market has developed several features of interest during this month. The Brazilians, who for months—I might say years—have shown unflinching firmness, have at last changed this attitude, and have accepted reductions in the cost and freight price of good average Santos, amounting to 5s. per cwt. Operators in the "Term" markets, who for months have been content to look on, are beginning to move by cautiously putting out a few "bears." The weather for the next crop has been all that could be desired, and the combined receipts at Rio and Santos from the present crop during the first three weeks of the month have come fully up to those for the same time last year.

I now propose to examine briefly the position of coffee in Brazil, in Europe, and in the United States. In Brazil the great feature is the immense crop to be expected next season. The trees are loaded as they never have been loaded before, but I think it is utterly impossible to find labour sufficient to cure and prepare this abundance for market. This applies specially to the province of Rio de Janeiro. In Sao Paulo, however, I believe that planters may be able to handle and deal with 5 million bags. The districts tributary to Victoria and Bahia likewise promise an exceptionally large crop. That a good deal of coffee will from various causes be wasted is unavoidable; but this, or even a short spell of unfavourable weather cannot now prevent Brazil from producing next season far away the largest crop she ever has raised. There can now be no question of disappointments, such as we have seen before. The favourable weather which has continued throughout November is a guarantee against that.

This splendid crop outlook is the cause of the changed attitude of the Brazilians. It has induced them to make concessions, and the extremely low rate of exchange (9 5-16d per milreis) has given them some compensation in the currency price they have received for their coffee. That they will have to make further concessions in cost and freight prices seems unavoidable, if they do not want to see stocks accumulate, and such will no doubt be made. But I do not believe that they will stop there. The Brazilians are a shrewd people, and I shall not be surprised if we shortly hear of them as large sellers of "Futures" in the "Term" markets, principally in New York and in Havre, for the purpose of protecting coffee they hold, and what they expect to raise.

In Europe the position of coffee is an easy one. The stocks at the leading ports make a respectable total, and when the heavy shipments on the way (brought about by the concessions) arrive, it will become still easier, leaving large stocks not only at the ports, but also with dealers in the interior. In fact, quite a respectable invisible supply is being gradually created, which will leave distributors in the interior in quite an independent position, and enable them to watch the progress of events. Many operators who for months have practically abstained from business in the "Term" markets will now resume business, and some may seriously consider whether it might not be policy to anticipate the action likely to be adopted by the Brazilians.

In the United States, the war of rates which has been going on between the leading roasters of New York and Chicago has had the effect of stocking up the retail dealers in most of the Western States. It has occurred to me that the large New York roaster, by initiating this campaign, has seen his way to accomplish two ends—one to damage his opponents, the other to force off large stocks of roasted coffee before the important decline takes place which he scarcely could help anticipating. The visible supply of coffee for America is large, the stocks which form part of it being about 100,000 bags larger than last year. Altogether, the position of coffee in the United States is also an easy one. Local operators have up to now shown little disposition to take sides, but I think that we must be prepared to see a change in this respect ere long.

The prospects of the market are distinctly in favour of a decline in the value of coffee. Whether this will take place slowly, or proceed at a rapid pace, the future will show.

A price will, after a time, be reached when merchants will stock up. What that price may be will be the subject of great difference of opinion. For my part, I believe that we must first see a reduction of cents per pound from the present price of Rio coffee No. 7. ANTON HVISTENDAHL.
—*Statist*, Nov. 30.

THE BEAUMONT TEA COMPANY OF CEYLON, LIMITED.

At a meeting of shareholders in this Company today (Jany. 6), the following resolutions were confirmed:—

(1) That the capital of the Company be increased by creating 5,000 new shares of R100 each and that the Directors be empowered to issue and allot the same, or any of them, in such manner, and at such time, or times, as they may think expedient, and at any premium, and generally on such terms and conditions in all respects as the Directors may determine.

(2) That the Directors be authorised to borrow money for the Company on mortgage debentures, and to that end to issue debenture bonds bearing interest at 6 per cent per annum for such amounts as may be required for the purpose of the Company, but not exceeding in the aggregate at any time half the then issued capital of the Company.

GREATEST AREAS OF FOREST.

According to the *Revue Horticole*, the greatest areas of forest country in the World are the following: In North America, north of the river St. Lawrence, covering large districts of the provinces of Quebec and Ontario. The length of this forest which stretches to the Hudson on one side and to Labrador on the other is 1,800 miles, and its breadth 1,070 miles. In South America the tropical and semi-tropical forests of the Amazon Valley and High Peru have a length of 2,200 and a breadth of 1,300 miles. The most extensive of the African forests, stretching from the valley of the Congo to the sources of the Nile and Zambesi, is still unpenetrated; its length is unknown, but its breadth falls little short of 3,200 miles. Southern Siberia contains probably the most enormous forests in the world. From the river Obi in the West to the valley of the Indigirka almost the entire area is covered with timber—a stretch of 3,200 miles. The breadth of this huge belt of wood cannot be much less than 1,800 miles.—*C. World.*

PLANTING IN THE NIGER PROTECTORATE.

Every effort is being made to plant out portions of the Niger Coast Protectorate as market gardens and orchards. A report just received by Lord Salisbury from Sir C. MacDonald, states that good progress has been made, and the Curator of the Botanical Gardens, Old Calabar, considers the condition of the gardens as satisfactory in most particulars. He continues:—The experimental part has been considerably extended, and there are now about twelve acres planted up, nearly all with economic plants. The former nursery being quite insufficient, an additional one of two acres has been taken in adjoining the gardens. Most of this is at the present time occupied with seeds and young plants, principally coffee seed for distributing the young plants to the natives. The large piece of bush that adjoined the gardens, between it and the barracks, has all been cut down and the roots grubbed up for the purpose of forming a coffee plantation. A portion of this, comprising about twenty-two acres, has been fenced in with a good wire fence. There are now planted out in it 2,100 coffee trees, which were mostly raised from seeds by myself in April, 1893, and planted out in August last year. The condition of most of these trees is very good. Some have already flowered, and many will produce seeds during the next year. The remaining portion of the enclosure will be planted as soon as the nursery plants are fit for removal.

I consider this a most important and valuable addition to the gardens—continues the Curator—as it enables the natives to see properly how a plantation should be made, and the pointing out to them its commercial value will act as an impetus to them to follow out its example. As some plants have already been supplied to natives, and others have made applications, it shows the object is beginning to be appreciated by them. The growth that the coffee plants first planted in the gardens have made has been excellent. Those trees, that are only twenty-seven months old from the time of putting in the seed, average a little over six feet high, with a fine and well-formed head, have all flowered, and would have borne a fair crop had they been allowed to do so. It is, however, better to remove the first crop of berries. For experiment I left one of the Arabian coffee trees to seed, and have just lately gathered a few berries. Another large undertaking in connection with the department has been the laying out of an orchard to the extent of about ten acres. This is situated facing the river between the barracks and Queen's Beach, and has planted in it 500 tropical fruit trees of the following varieties:—Orange, lime, bananas (Canary variety) (Musa Chinensis), Avocado pear, Akee, sour-sop (Anona muricata), papaw, and about 100 pine-apple plants. It is now in a promising condition, though a good deal of trouble has been caused by the inroads of sheep and cattle. An avenue of mangoes has been planted along the road leading from the Government employés' quarters to the barracks, and another one along the straight path from the Botanical Gardens to the Consulate Hill. These plants, though small at present, will in the course of two or three years given an excellent appearance and shade to the roads.—*Planters' Gazette*, Dec. 1.

ANOTHER CEYLON TEA COMPANY.

Under the title of the Nuwara Eliya Estates Company, Limited, a Company has been registered with a capital of £150,000 in £10 shares to adopt and carry into effect an agreement, made November 28, between W. Megginson of the first part, Frith, Sands & Co., of the second part, Leechman & Co., of the third part, and C. R. Speed, on behalf of this Company, of the fourth part; generally, to acquire certain tea and other gardens in Ceylon, and to carry on the business of tea planters, merchants, brokers, and shippers. These signatories, who take one share each, are J. Sands, 50, Old Broad Street, E.C.; C. A. W. Cameron, 50, Old Broad Street, E.C.; C. R. Speed, 50, Old Broad Street, E.C., S. H. Smith, 50 Old Broad Street, E.C.; W. R. Sand, 50 Old Broad Street, E.C., H. St. J. O. Thompson, 38, Mincing Lane, E.C.; P. Williams, 33, Hyde Park Gardens, W. The first directors, of whom there shall not be less than three nor more than five, are H. St. J. O. Thompson, C. A. W. Cameron, and C. R. Robson. Qualification, £250. Remuneration £50 each per annum when the subscribed capital does not exceed £33,000, £100 when it is between £33,000 and £100,000, and £150 each when it exceeds £100,000.—*H. & C. Mail.*

DRUG REPORT.

(From the *Chemist and Druggist.*)

London, December 12th.

NUX VOMICA remains very low in price. A few odd packages of ordinary quality sold today at from 4s to 5s per cwt.

ESSENTIAL OILS.—The principal feature in the essential oil market this week is the continued advance in Lemongrass oil. It is said that as much as 1s 11d per lb has been paid for this article on the spot, while for delivery business has been done at 1s 6 5-16th d. per lb c i f (drums) for June and at 1s 6 9-16th d. per lb c i f (drums) for April shipment. Lemongrass oil is quoted at 2½d per oz the spot. Cinnamon-leaf oil has been in strong demand. Sales have been made at 4d and 4½d per oz, and as much as 5d per oz is now required. Four cases of fair Cinnamon oil sold at auction today at 10¼d to 11¼d per oz.

COCAINE.—Unaltered. A fair demand is reported at the previous quotations of 14s per oz for 100-oz lots.

ARECA.—Ten bags of fair quality sold today at 12s per cwt.

VANILLA.—At auction today 256 tins (about 1,800 lb) of vanilla met with less competition, and sold at lower rates for long beans, part of the supply being bought in. Fine crystallised 7½ to 8 inches, realised 28s 6d to 31s; good, 7 to 7½ inches, 27s 6d to 28s 6d; 6 to 6½ inches, 24s 6d to 26s; 5 to 6½ inches, 22s 6d to 23s 6d; 4½ to 5 inches 22s to 23s; dull and grey from 16s 6d down to 6s 6d per lb.

LAND IN SELANGOR.

In the *Selangor Gazette*, Mr Holmes writes from Kuala Selangor:—I received, during the month, 16 applications for land from Europeans and others for blocks varying in area from 320 to 1,000 acres, each applicant proposing to plant coffee. The Resident has since given instructions to the Chief Surveyor to have 20 blocks laid out in accessible parts of the district, and these will be put to auction at an early date. I have every reason to believe that the district will prove to be a planting one, and the fact of its having a port and its proximity to Penang should be in its favour.

Mr. Skeat, on the same subject, in his report on Klang, says:—The land demarcated during October comprised 101 lots, aggregating 515 acres. The balance of land undemarcated has now been reduced to 1,885 acres. Mr. E. V. Carey took up 500 acres on the Sungei Binjei Road, and an application for 320 acres was also received on behalf Mr T. Fairhurst for land adjoining Mr Carey's application. The land in the vicinity has been very favourably reported upon by all who have seen it, the soil lying nearer to the surface and being less fibrous than some of the land on this side of the river. The Sungei Binjei Road, if carried through to Ijoh, should have as bright a future before it as either the Langat Road or the Jalan Kabun; applications were also received from Mr Cropley for 50 acres and from Yap Ah Boon for 25 acres, of mining land at Bukit Kamuning.

PROTECTION OF INSECT-EATING BIRDS.

The following letter has been addressed to the editor of *The Argus*:—

Sir,—I have read with much interest the letters from Mr. C. French and Mr. F. R. Godfrey in your columns pleading for the Artemidæ, or wood-swallows. Are those gentlemen aware that the birds in question are among the worst pests the bee-keeper has to contend against? They are now in very great numbers in this district and may be seen flying about the orchards and gardens feeding upon bees.

My attention was drawn to this fact some years ago by a neighbour, who had a large number of hives, shooting the birds. On my remonstrating with him, I was shown a bird just shot with no less than 17 bees inside it. I watched the birds for some considerable time in my own orchard and saw them feeding on the bees, often flying within a couple of feet of a hive to seize a weary homeward-bound worker, evidently preferring those well laden with honey. I shot several and always found them full of bees.

This year the birds are far more numerous, consequently the apiarist suffers to a greater extent. I am well aware of the fact that these birds also destroy noxious insects in very great numbers, but when an apiarist finds his hives becoming weaker and weaker, and at last discovers the wood-swallow to be the cause, can it be wondered at if he protects himself by destroying them? I should much like to learn if apiarists in other districts have suffered in a similar manner.—I am, &c.,

EDWARD A. L. VIEUSSEUX.

Grammar School, Berwick.

CLOSETS, Urinals, Night Commodes, Stables, Kennels, &c. should be lightly dredged (after cleansing) with CALVERT'S 15 per cent. CARBOLIC POWDER, to destroy bad odours and to kill or keep away insects. The most effective preparation.—In ½ lb., 1 lb. and 2 lb. dredgers, at 6d., 1s, & 1s. 6d. each, from Chemists and Stores.

F. C. CALVERT & Co., Manchester.

INDIAN TEA FIGURES FOR 1895.

The extraordinary fluctuations in the figures of Indian tea as published monthly surely require some explanation. Various reasons are given for these fluctuations, but we have been unable to get a sensible explanation, and we do not pretend in this to solve the difficulty nor to attempt it, but merely wish to draw more attention to the subject as it is bound to have an unsettling effect on the markets. Having before us the Brokers' circulars, we quote from them the following figures dated 2nd October. Exports from Cacutta, to Great Britain to date, from beginning of the season.

(As per Customs passes.)

1895-96.	1894-95.	1893-94.
62,870,708lb	62,036,103lb	56,738,723

Landings in London during September.

1895.	1894.
14,600,000	18,802,000
DELIVERIES.	
1895.	1894.
9,100,000	8,931,000
STOCK.	
1895.	1894.
33,941.000	31,435.000

Then going on, the same circular gives for four months, 1st June to 30th September—

IMPORTS.

1895.	1894.
38,732,036	36,940,000

and deliveries

1895.	1894.
33,628,906	33,981,000

During the period any one will observe that the deliveries this year are slightly under those of 1894: the imports have increased by about one million and three quarters whilst the landings in September were about 2¼ million less than in 1894.

Take October again, the exports by Customs passes, were 81,560.489 lb. against 78 300,415 lb. the landings in London 19,000.000 against 17.724,000 lb. in 1894 Imports were 57,744,000 against 54,665,000 in 1894 And Stock on 1st November stood at 41,500,000 for 1895 and in 1894 37,688,000.

Can anyone reconcile these figures? Please note the landings in September were 2¼ million lb. less than in 1894; the deliveries were practically the same, still the stock increased. Again, for November London Imports were for 1895, 15,800.000 lb. for 1894, 17,688.036 lb. deliveries 12,100,000 lb. against 11,932.701. Stock, 45,274.000 lb. against 43,443,024.

During the period. the exports from Calcutta from an increse of less than a million jumped to close on five million lb. the figures being as under on 2nd October—1895—62,870,708 lb. 1894, 62,035,103 6th December 101,175,256 lb., 96,704.720. and Stock stands very much as before. We are well aware that all this increase cannot be shown, but the leaps and bounds, which the crop takes every now and then, show that the present system of checking figures is wrong somewhere or else that figures and teas as well are suppressed for some ulterior reason. Taking the figures of the Indian Tea Association, the amount available for export is established at 124 million. Putting this into the manufacturing months, say 8, would give an average outturn of 15 millions monthly. Now September, was a notoriously bad month, and, the presumption, judging from a list of gardens in front of us, is there was less tea made in September this year than last. And October was not by any means extra favourable in the early part; although, undoubtedly, the weather was more genial towards the end, yet these hardly could have been manufactured during that time, say a fortnight. This gives an increase of 30 odd per cent; and the conclusion that must occur to any one is, that teas were held with a view to forcing the market, if not for what other reason? Had this occurred in the early part of the season, one could have found plenty of reasonable excuses, but when the season for floods and storms had long passed, the matter assumes quite a different phase, and we should be glad of some reasonable explanation.—*Indian Planters' Gazette*, Dec. 28.

THE COCONUT OIL SITUATION.

In the *Reporter* of October 28th we pointed out editorially some features in connection with the position of coconut oils which seemed to warrant the conclusion that the market for both kinds would continue favorable to sellers during the balance of the year, if not longer, and since then the course of events has fully confirmed that view. As regards Ceylon oil, the situation, as explained in our previous article, has not materially changed, but recent developments in the market for Cochin oil have been decidedly interesting and important.

It has come to light that within the past ten days practically all the Cochin oil on the spot has passed under the control of two strong local houses. Small stocks are still held by two other concerns, but the quantity is comparatively insignificant and cannot possibly become a disturbing factor, even if the parties were disposed to release their holdings at prices below current quotations. But they are not so inclined, particularly as the oil is in demand and saleable at full figures, and the immediate outlook, at least, is a promising one. The negotiations which culminated in the acquisition of the supplies of Cochin oil, as stated, were conducted so quietly that few in the trade were aware of what was being done until the purpose aimed at had been accomplished. In making these purchases, the houses in question were guided by what they deemed a favorable opportunity to make a safe investment, and since the deal was consummated the market has responded by an advance, supplemented by increased firmness. The quantity that changed hands and the price paid for the goods have not been disclosed, though several hundred tons are said to be involved, and it is surmised that five and a half cents was the figure agreed upon. What lends special interest and significance to these transactions is the fact that virtually all of the Cochin oil due here this season has already arrived and passed either into consumption or under the control of the three or four operators alluded to, leaving the market at present with only a moderate supply. Furthermore, the offerings from primary markets are very limited, and prices there are gradually hardening. According to cables received this week from London, stocks there are considerably reduced, and it costs all of six and a quarter cents to buy there and lay down Cochin oil here. Mail advices show that the stock of coconut oils, all kinds, held in London on the 1st of November was 770 tons, against 968 tons on the 1st of October and 1,107 tons on the 1st of September, thus indicating a steady demand with diminishing receipts. The inquiry for coconut oils, particularly Cochin, has recently improved, and most of those dealers who are usually well equipped to meet all requirements have latterly been inconvenienced by curtailed supplies of Cochin oil. While this has not been true, to the same extent, of Ceylon coconut oil, the market has been seasonably active, and as stocks are under firm control prices continue steady and the general situation in that oil is characterized by a healthy tone.

The higher quotations now ruling for Cochin oil on the spot, are therefore due partly to a better consumptive demand, combined with increasing strength abroad, and partly to the fact that local supplies have been concentrated in strong hands. Present holders contend that existing conditions justify still further additions to current values, and there are reasons for believing that by degrees the price will be raised to a point more in harmony with the import cost. In doing this the trade will, of course, bear in mind that, while even partial relief to the market cannot immediately be expected by direct shipments from Cochin, holders in London are in a position to spare moderate quantities, provided they can obtain satisfactory prices. It follows, therefore, that should the movement here continue in an upward direction, the limit will have been reached when values touch or closely approximate the cost to land the oil from London. At that centre the imports of coconut oil for the first ten months of this year were 3,105 tons, compared with 2,430 tons for the corresponding period in 1894; 2,464 tons in 1893, 2,705 tons in 1892, 5,078 tons in 1891 and 3,345 tons in 1890. The returns do not indicate what proportion of this is Cochin or Ceylon oil.—*New York Drug Reporter*, Nov. 25.

WYNAAD PLANTERS' ASSOCIATION.

Proceedings of a general meeting held at Poothacoolie Bungalow, on Wednesday, 18th December, 1895. Deputation to the Viceroy.—A circular from the Secretary of the V. P. A. S. I. giving the Viceroy's answer to the deputation was laid on the table. The Honorary Secretary stated that after the deputation to the Viceroy, Messrs. Acworth, Hamilton, Sprott and himself had met and passed resolutions to the following effect:—1. That in the opinion of the deputation, the answer given by the Viceroy was so far satisfactory that no further action need be taken until His Excellency had returned to Calcutta and had sent in a definite reply. 2. That inasmuch as His Excellency the Viceroy had stated that he believed that there were many weighty opinions against the necessity of givi..g advances at all, we, as representatives of the community, put it on record that in our unanimous opinion the giving of some amount of advance when making contracts for labor was an absolute necessity. 3. Proposed by the chairman, seconded by Mr. C. A. Mackenzie and carried unanimously that this Association endorses the action taken by the Honorary Secretary and records its opinion that the giving of some form of advance is necessary.

TEA AND COFFEE GROWING IN FIJI.

AN UNSUCCESSFUL EXPERIMENT.

The *Fiji Times* quotes a reference which appeared in our columns regarding a farewell dinner to Mr. Stephens, eldest son of the Patriarch of Dolosbage, on the occasion of his leaving Fiji. Our South Sea contemporary says:

Mr. Stephens will leave Fiji in the R.M.S "Warrimoo" on 3rd proximo on his return to Ceylon, a disappointed man. That he should be so, is only natural, considering that he has spent about fifteen of the best years of his life in this colony in the endeavour to grow tea and coffee at a profit. He has finally abandoned all hope of being able to bring the enterprise to a successful issue, labour troubles being the chief difficulty. We in common with the many well-wishers of the colony deplore his departure exceedingly. We understand that he has been offered an appointment in his first home, Ceylon.

DEAFNESS. An essay describing a really genuine Cure for Deafness, Ringing in Ears, &c., no matter how severe or long-standing, will be sent post free.—Artificial Ear-drums and similar appliances entirely superseded. Address THOMAS KEMPE, VICTORIA CHAMBERS, 19, SOUTHAMPTON BUILDINGS, HOLBORN, LONDON.

INDIAN TEA SALES.

(*From Watson, Sibthorp & Co.'s Tea Report.*)

CALCUTTA, 24th Dec. 1895.

There was a good general demand in the sales held on the 20th instant. Prices for all kinds ruled rather irregularly, but without quotable change, the tendency being slightly in favour of buyers. 16,986 packages changed hands.

The average price of the 16,986 packages sold is As. 7-0 or nearly 7¾d per lb. as compared with 15,552 packages sold on the 20th December 1894 at As. 9-10 or nearly 10d per lb. and 10,859 packager sold on the 21st December 1893 at As. 6-10 or about 8½d per lb.

The Exports from 1st May to 21st December from here to Great Britain are 106,362,937 lb. as compared with 101,035,102 lb. at the correspondiug period last season and 99,178,598 lb. in 1893.

NOTE—Last Sale's average was As. 7-7 or nearly 8½d per lb.

EXCHANGE—Document bills, 6 month's sight 1s 2-1-32d.

FREIGHT—Steamer—£1-11-3 per ton of 50 c. ft.

(*From William Moran & Co.'s Market Report.*)

CALCUTTA, 24th Dec. 1895.

TEA.—The last tea auctions for 1895 were held on Friday, the 20th instant, when 17,528 packages were offered, of which 17,062 packages were sold.

The sale comprised a large quantity of brown and common descriptions, which were rather easier in tone; finest were also in rather less demand, while medium kinds remained unaltered.

The next auctions are fixed for the 3rd prox.

TOTAL QUANTITY OF TEA PASSED THROUGH CALCUTTA FROM 1ST APRIL TO 21ST DEC.

	1895.	1894.	1893.
Great Britain	106,553,481	100,963,271	98,178,598
Foreign Europe	242,782	209,041	351,519
America	1,008,146	481,707	261,833
Asia	3,649,352	3,384,609	2,275,030
Australia	5,879,771	4,462,083	5,059,720
	117,333,535	109,500,711	106,126,700

INDIAN PATENTS.

Calcutta, the 28th November, 1895.

Applications in respect of the undermentioned inventions have been filed, during the week ending 23rd November 1895, under the provisions of Act V of 1888:—

FOR IMPROVEMENTS IN TEA LEAF ROLLING MACHINES.—No. 361 of 1895.—Samuel Cleland Davidson, of Sirocco Engineering Works, Belfast, Ireland, Merchant, for improvements in tea leaf rolling machines.

Specifications of the undermentioned inventions have been filed, under the provisions of Act V of 1888:—

FOR IMPROVEMENTS IN APPARATUS FOR WITHERING TEA LEAF.—No. 145 of 1895.—Robert Thomson, of Kinning Park Engine Works, Kinning Park, in the County of Renfrew, Scotland, Engineer and Tea Planter, for improvements in apparatus for withering tea leaf. (Filed 1st November 1895.)—*Indian and Eastern Engineer.*

THE IMPERIAL CEYLON TEA ESTATES, LD.

We learn that Inverness and Edinburgh estates have been acquired by Mr. Megginson on behalf of this Company, the agents of which are Messrs. J. Whittall & Co. in London and Messrs. Whittall & Co. in Colombo. The estates which this Company have now arranged to purchase are as follows:—

	Total acreage.	Cultivated.	Price.
Inverness and Edinburgh	432	392	£33,000
Binoya	929	441	£26,703
Mottingham	258	220	
Nonpareil	549	402 (coffee & tea)	£8,000
	2,168	1,455	£67,703

The subscribers to the Company are:—

J. H. M. Shaw, 9, Fenchurch-avenue, E.C.; C. S. Lott., 9, Fenchurch-avenue, E.C.; S. Gray, 9, Tregothnan-road, Clapham; C. R. Shaw, 92, Wimpole-street, W.; A. Thomson, 9, Fenchurch-avenue, E.C.; F. R. Cave 23, Clarendon-gardens, Maida Vale; J. Stevens, Loch Goil, Romford.

VARIOUS PLANTING NOTES.

THE CREOLE (RED) RICE OF LOUISIANA is pronounced by the Government chemist at Washington to be the richest of all rice in nutrient properties. This is no new thing. for its merits have been fully appreciated for a century past in the Southwest. In that locality it is given preference over white rice, and in view of the fact above noted and of its cheapness, ought to command a greatly extended patronage in the North and West.—*American Grocer*, Dec. 4.

ROYAL GARDENS, KEW.—The Bulletin of Miscellaneous Information for November has the following contents:—Ai Camphor; Botanical Nomenclature; New Orchids, 15; Begonia Disease; Rafia from West Africa (continued); Diagnoses Africanæ, IX; Sumach; Liberian Coffee; Micellaneous Notes:—Funeral of M. Pasteur, Botanical Magazine, Index Kewensis, Kew System of Greenhouse Construction, Rosa wichuraiana, West Indian Frog at Kew, Spot Disease of Orchids, Arabian Objects for Museum, Pictures of the Lake, Select Extra-tropical Plants, Cape Herbarium, Camphor, Shade Tree for Coffee, and Crop of Cider Apples.

THE COFFEE INDUSTRY ON HAWAII, says the *Planters' Monthly*, is being pushed forward by as energetic and intelligent a class of men as ever engaged in pioneer work. They, however, labor under drawbacks of various kinds, which only time and perseverance can overcome. This industry requires five years to bring it into a paying condition: and to succeed, the pioneers need not only perseverance, but ample means to carry along their load, until the crops begin to come in freely, when brighter prospects will follow. No better coffee is anywhere raised than Hawaiian, and this fact alone should give firm assurance as to the ultimate result. All who have used it, both here and in other countries—some many years—are unanimous in the opinion that for delicious flavor and for permanent health-growing qualities, there is no equal to the pure Hawaiian coffee. Still, the amount for export this year will be small, as none of the new plantations are yet five years old; but in 1896, better returns may be expected.

GUMMING IN FRUIT TREES.—In Mr. Iggulden's very interesting remarks on Peach tree failures he says, "French experts think gumming is caused by the sun." While I think it may do so in France, I think cold may be one great cause of gumming in England, as we generally find a great deal more after severe winters, and I think the bursting of the cells, while the sap is freezing, has more to do with it than is generally supposed. The chief cause in Peach houses, as Mr. Iggulden says, is bursting the cells by injury from wires, or knocking the bark off by tools; but in each case the cells are burst, and the gum exudes out, and if this gum is left on the bark it injures it to such an extent that it has the appearance of canker, and if it drops on to a sound branch it injures the bark there, if the shoot is a young one with thin bark. I am quite aware that gumming is supposed to be caused by the Coryneum fungus. But is this fungus the first cause of gumming? or does it breed spontaneously in the sap after it has exuded? If so, the dropping of the gum (with the fungus in it) on to another branch would cause gumming there by rooting into the bark and into the sap. I find Plum trees on a north wall that have had no sun are badly affected.—J.L.—*Journal of Horticulture and Cottage Gardener.*

COLOMBO PRICE CURRENT.

(Furnished by the Chamber of Commerce).

Colombo, Jan. 6, 1896.

EXCHANGE OF LONDON, CLOSING RATES, *Bank Selling Rates*:—On demand 1/2 1-32 to 1-16; 4 months' sight 1/2 1-16 to 3-32; 6 months' sight 1/2¼. *Bank Buying Rates*:—Credits 3 months' sight 1/2 3-16; 6 months' sight 1/2 7-32; Docts. 3 months' sight 1/2 7-32; months' sight 1/2¼.

COFFEE.—Plantation Estate Parchment on the spot per bushel, R16 to 17.—nominal. Estate Crops in Parchment, Jan. delivery, no quot., Plantation Estate Coffee, f.o.b. on the spot per cwt, R82 to 83.—nominal. Plantation Estate Coffee f.o.b. Liberian parchment; Garden and Chetty Parchment; Garden and Chetty Coffee f.o.b.—All these are no quotations. Native Coffee f.o.b. per cwt. R70.—noml.

TEA.—Average Prices ruling during the week: Broken Pekoe, per lb 55c. Pekoe per lb 38c. Pekoe Souchong, per lb 30c Broken mixed and Dust, per ql 29c.—Averages of 18th December, 1895.

CINCHONA BARK.—Per unit of Sulphate of Quinine per lb 1½c. to 3c.—1½ to 3½ %.

CARDAMOMS.—per lb 80c. to R1·50.—Nominal.

COCONUT OIL.—Mill oil per cwt. R14·87 to 15·25. Dealer's oil per cwt.—no quotations. Coconut oil in ordinary packages f.o.b. per ton R332·50 to 333·75.—Buyers.

COPRA.—Per candy of 560 lb R40·00 to R47·50.

COCONUT CAKE: (Poonac) f.o.b. per ton, R40 to 51·25.

COCOA.—(Unpicked & undried) per cwt, R30 to 42.

Do f.o.b. do ....

COIR YARN.—Nos. 1 to 8 { Kogalla per cwt. R7 to 19. / Col. side ,, R6·00 to 16.

CINNAMON.—Nos. 1 & 2 only f.o.b. 64c.—Noml. Ordinary Assortment, per lb 61c.—Noml.

PLUMBAGO:—Large Lumps per ton, R150 to 330. Ordinary Lumps per ton, R130 to 290. Chips per ton, R80 to 140. Dust per ton, R30 to 90.

EBONY: per ton.—No Sales.

RICE.—Soolye per bag, R7·00 to R7·90.

Pegu and Calcutta Calunda per bag R7·75 to R8·10.
Coast Calunda per bushel, R3·15 to R3·35.
Muttusamba per bushel, R3·85 to R3·85.
Kadappa and Kuruwe per bushel, R2·90 to 3·15.
Rangoon Raw 3 bushel, bag, R10·50.

FREIGHTS.

Cargo.	Per ton London per str.	N. York per str.	Trieste per str.	Mar'lles per str.	Hamb', Bremen &c.
	s. d.	s. d.	s. d.	R. c.	s. d.
Tea	22/6	..	25/	25	22/6
Coconut Oil	20/	..	25/	25	22/6
Plumbago	22/6	..	25/	25	22/6
Coconuts in bags	..	..	25/	25	22/6
Other Cargo	..	..	25/	25	22/6
Broken Stowage	11/3	..	25/	25	22/6
SAILERS.					
Coconut Oil	..	32/6	..	..	..
Plumbago	..	32/6	..	..	..

New York rates per steamer with transhipment 12/6 @ 15/ above London rates.

LOCAL MARKET.

By Mr. A. M. Chittambalam, 7, Baillie St., Fort.

Colombo, Jan. 8th, 1896.

Garden Parchment :—	R15·00 to 15·25	per bushel
Chetty do :—	15·50 to 16·00	do
Native Coffee :—	58·00 to 59·00	per cwt
do f.o.b. :—	70·00 to 64·00	do
Liberian Parchment,	13·00	per bushel (nominal)
do Coffee,	65·00	per cwt
CARDAMOMS.—	0·70 to 2·00	per lb (nominal)
COCOA.—(nominal)	35·00 to 45·00	per cwt do
RICE.—Market is quiet:—		
Kazla	R6·50 to 6·75	per bag
Soolye	7·00 to 7·50	do
Callunda	7·75 to 8·00	
Coast Callunda	3·00 to 3·06	per bushel
Kuruve (New)	2·75 to 2·87	do
Muttusamba	3·25 to 3·50	do

CINNAMON.—Quoted Nos. 1 to 4, at 54c and Nos. 1 and 2 at 58 cents per lb (nominal)
CHIPS.—R75·00 per candy (nominal)

COCONUTS.—Ordinary	R35·00 to 38·00	per 1,000 (nominal)
do Selected	40·00 to 43·00	do do
COCONUT OIL.—	15·00 to 15·12	per cwt do
COPRA.—Market steady:—		
Kalpitiya	R46·50 to 47·00	per candy
Marawila	44·00 to 46·00	do
Cart Copra	39·00 to 43·00	do
POONAC.—Gingelly	65·00 to 75·00	per ton
Chekku	80·00 to 85·00	do
Mill (retail)	55·00 to 60·00	do
EBONY.—quotations at	R100 to R185	(nominal)
SATINWOOD.—cubic feet	1·50 to 2·12	do
HALMILLA.— do	1·25 to 1·50	do
KITUL FIBRE.—Quoted at	R30·00	per cwt (nominal)
PALMYRA FIBRE.—Quoted nominally:—		
Jaffna Black.—Cleaned (Scarce)		
do Mixed	R17·00 to 18·00	per cwt.
Indian do	R7·00 to 9·00	do
Do Cleaned	10·00 to 14·00	
SAPAN WOOD.—Quoted	60·00 to 70·00	per ton
KEROSINE OIL—American	7·25 to 7·50	Per case
do Russian	3·35 to 3·40	per tin
KAPOK.—Cleaned f. o.b :—	27·00 to 27·50	(nominal)
do Uncleaned	6·00 to 6·50	(Scarce)
Croton Seed	13·00 to 17 00	do
Nux. Vnomica	2·50 to 3·00	per cwt

CEYLON EXPORTS AND DISTRIBUTION. 1894-1895.

COUNTRIES.	Coffee cwt. Plantation	Coffee cwt. N'tive	Coffee cwt. Total.	Cinchona. 1895 B'nch & Trunk lb	Tea 1895 lb.	Tea 1894 lb.	Cocoa cwt.	C'moms lb.	Cinnamon. Bales lb.	Cinnamon. Chips lb.	Coconut Oil. 1895 cwt.	Coconut Oil. 1894 cwt.	P'bgo. 1895 cwt.
To United Kingdom	44315	36	44351	642939	85753339	75348644	23095	213642	1279530	362735	149191	240201	122273
,, Austria	3585	100	3685	..	5335	6934	194	..	6800	5600	25838	33720	..
,, Belgium	25	..	25	90728	12253	8981	954	..	39500	26412	5610	11110	19300
,, France	1233	1056	2289	7900	49586	18366	473	80	24300	25200	404	483	433
,, Germany	649	..	649	..	281578	159637	784	47386	286615	323568	13822	26522	37540
,, Holland	1	..	1	20474	15833	2475	..	..	..	..	401	..	4069
,, Italy	1	..	1	21647	8556	4800	50	..	153500	130283	908	8360	140
,, Russia	159	..	159	..	333548	41491	..	..	..	..	..	7628	..
,, Spain	..	..	..	..	64285	45753	45	..	178500	12584	101	99	..
,, Sweden	..	..	..	..	750	500	..	..	..	..	..	..	..
,, Turkey	..	..	..	..	15017	9655	..	..	..	..	..	..	..
,, India	1049	1235	2284	..	831070	874205	2	105165	1122	50	14744	22307	506
,, Australia	7749	688	8437	..	9379561	7446782	72	112	9260	12304	1983	3236	871
,, America	740	74	814	136501	393527	216422	1431	5772	125000	22400	148532	128063	149789
,, Africa	..	..	..	..	150490	74789	..	274	..	..	166	..	.
,, China	147	..	147	..	321431	155522	33	2204	65400	..	1262	1710	..
,, Singapore	2	..	2	..	34351	23465	283	..	..	..	21178	4132	..
,, Mauritius	372	802	1174	896	186096	106675	..	..	..	..	..	..	..
,, Malta	..	..	..	..	103265	46615	..	..	..	..	..	..	..
Total exports from 1st Jan. to 31st December. 1895	60029	3991	63920	921085	97939871		27420	374635	2169527	920136	384140		334921
do 1894	31553	652	32205	2497616	84591714		21110	306317	1969905	657726	487571		339521
do 1893	52539	2651	55190	3571325	81406064		30658	428210	1995257	667115	389712		337605
do 1892	40604	2539	43143	6793320	71153657		17327	372510	1947538	615155	550977		426761

MARKET RATES FOR OLD AND NEW PRODUCTS.

(From S. Figgis & Co.'s Fortnightly Price Current, London, 18th December, 1895.)

EAST INDIA. Bombay, Ceylon, Madras Coast and Zanzibar.	QUALITY.	QUOTATIONS
ALOES, Socotrine	Good and fine dry liver...	£3 10s a £6
Zanzibar & Hepatic	Common and good ..	30s a 8's
BARK, CINCHONA Crown	Ledgeriana chips ...	2d a 3½d
	Original stem	1½d a 3d
	Renewed	2d a 4½d
	Chips	1¼ a 2d
BEES' WAX, White ...	Sli. sof. to gd. hard brig.	£7 10s a £8
Yellow ...	Dark to fair	£6 a £7
Mauritius & Madagascar..	Fair to fine	£6 10s a £7
CAMPHOR, China ..	Fair average quality	197s 6d
Japan ..		201s 3d
CARDAMOMS—		
Allepee	Fair to fine clipped ..	1s a 2s 6d
Mangalore	Bold, bright, fair to fine .	1s 10d a 2s 8d
Malabar	Clipped, bold bright fine	1s 8d a 2s 3d
Ceylon	Middling, stalky & lean	1s 3d a 1s 6d
Tellicherry	Good to fine	1s 6d a 1s 8d
	Brown sh	9d a 1s 4d
Mysore	Fair to fine pmp. cl pl.	1s 9d a 3s 6d
	,, ,, small ..	1s 2d a 1s 5d
Long Ceylon ...	Shelly to good	1s 1d a 2s 11d
	Seeds ...	2s a 2s 2d
CASTOR OIL, 1sts	White	2¼d a 3d
2nds	Fair and good pale ..	2¼d a 2½d
CHILLIES, Zanzibar ..	Fair to fine bright .	30s a 35s
	Ord'y. and middling ...	26s a 30s
CINNAMON, 1sts	Ord'y. to fine quality ..	9½d a 1s 3d
2nds	,, ,, ,, ,, ..	9d a 1s 1d
3rds	,, ,, ,, ,, ...	3½d a 1s
4ths & 5ths	Woody and hard	7½d a 9½d
Chips	fair to Good ..	3d a 3¾d
CLOVES, Zanzibar and Pemba.	Fair to fine bright ...	2 15-16d a 2½d
	Common dull and mixed	1¾d a 2 d
,, STEMS	Common to good ..	d
COCULUS INDICUS ...	Fair sifted...	3s a 12s
COFFEE	Bold to fine bold color	105s a 112s
	Midding to fine mid .	97s 6d a 104s
	Low mid and low grown	95s a 99s
COLOMBO ROOT... ...	Good to fine bright sound	10s a 20s
	Ordinary & middling ..	7s a 8s
CROTON SEEDS, sifted..	Fine fresh ...	50s
CUTCH	Fair to fine dry ..	20s a 32s
DRAGONS BLOOD, Zan.	Ordinary to good drop ..	20s a 50s
GALLS, Bussorah & Turkey	Fair to fine dark blue ..	0s a 55s
	Good white and green ..	0s a 47s 6d
GINGER, Calicut Cut A	Good to fine bold	58s a 70s
B & C	Small and medium	52s 6d a 57s 6d
Cochin Rough..	Common to fine bold ..	33s a 37s
,, ..	Small and D's ..	30s a 33s
Bengal Rough	Fair to good .	18s a 22s
GUM AMMONIACUM ..	Blocky to fine clean ..	20s a 50s
ANIMI, washed ..	Picked fine pale in sort	£9 a £11
	Part yellow & mixed	£8 10s a £8 15s
	Bean & Pea size ditto	£1 a £7 10s
	Amber and red bold	£5 a £7
scraped..	Medium & bold sorts	£4 a £7
ARABIC E.I. & Aden...	Good to fine pale frosted sifted	12s 6d a 50s
	Sorts, dull red to fair ..	32s 6d a 40s
Ghatti ...	Good to fine pale selected	40s a 50s
	Sorts middling to good	2s 6d a 37s 6d
Amrad cha	Good and fine pale ..	3s a 50s
	Reddish to pale brown ..	27s 6d a 32s
Madras ...	Dark to fine pale ..	20s a 33s 6d
ASSAFŒTIDA	Fair to fine pinky block and drop	4's a 80s
	Ordinary stony to middling	15s a 40s
KINO	Fair to fine bright ..	£25 a £30
MYRRH, picked	Fair to fine pale ...	£4 10s a £6
Aden sorts	Middling to good ...	60s a 70s
OLIBANUM, drop...	Fair to fine white ...	30s a 55s
,,	Reddish to middling ..	20s a 25s
pickings...	Middling to good pale ...	3s a 14s
siftings	Slightly foul to fine .	9s a 13s
INDIARUBBER	Red hard clean ball ...	2s 1d a 2s 5½d
East African Ports, Zanzibar and Mozambique Coast	White softish ditto ...	1s 8d a 2s 2d
	Unripe root	10d a 1s 5d
	Liver and Lamu Ball ...	1s 8d a 2s 2d
	Sausage, ordinary to fine	1s 3d a 2s
	,, without sticks	2s 1d a 2s 4d
	Good to fine ..	1s 7d a 2s 2d
Assam	Common foul & middling	4d a 1s 5d
	Fair to good clean ..	1s 6d a 2s 2d
Rangoon	Good to fine pinky & white	2s 2d a 2s 6d
Madagascar, Tamatave, Majunga and Nossibe	Fair to good black ...	1s 6d a 1s 10d
ISINGLASS or FISH MAWS Tongue.	good to fine pale ...	2d a 2s 9d
	dark to fair .	10d a 1s 8d
Bladder Pipe	Clean thin to fine bold...	1s 8d a 2s 9d
Purse...	Dark mixed to fine pale...	9d a 1s 3d

EAST INDIA. Bombay, Ceylon, Madras Coast and Zanzibar.	QUALITY.	QUOTATIONS.
Kurrachee Leaf ...	Good and fine pale	2s 6d a 3s 2d
	Red part thin ..	1s 8d a 2s 4d
INDIGO Bengal	Middling to fine violet...	4s 6d a 5s 2d
	Ordinary to middling ...	3s a 4s 3d
Kurpah	Fair to good reddish violet	2s 7d a 3s 1d
	Ordinary and middling	1s 6d a 2s 4d
Madras (Dry Leaf)	Middling to good ...	1s 7d a 2s 10d
	Low to ordinary ...	7d a 1s 5d
IVORY—Elephants' Teeth—		
60 lb & upwards ...	Soft sound	£59 a £66
over 30 & under 60 lb.	,, ,,	£50 a £62 10s
60 a 100 lb. ...	Hard ,, ,,	£38 a £47
Scrivelloes	Soft ,, close & wide	£22 a £35 10s
Billiard Ball Pieces 2⅝ a 3¼in	Sound soft	£90 10s a £103
Bagatelle Points ...	Sli def. to fine sound soft	£51 a £63
Cut Points for Balls ...	Shaky to fine sound sl. sft	£67 a £76
Mixed Points & Tips...	Defective, part hard ...	£33 a £16
Cut Hollows	Thin to thick to sd. sft	£25 a £41
Sea Horse Teeth — ... ⅔ a 1¼ lb.	Straight crked part close	1s a 3s 1d
MYRABOLANES, Bombay	Bhimlies I, good & fine pale	7s 6d a 7s 9d
	,, II, fair pickings	3s 6d a 4s
	Jubblepore I, good & fine pale	6s 3d a 7s
	,, II, fair rejections	3s 6d a 4s 6d
	Vingorlas. good and fine	1s 6d a 5s 6d
Madras, Upper Godavery	Good to fine picked ...	5s a 5s 6d
,, ,, ..	Common to middling ...	3s 3d a 4s
Coast	Fair	4s 6d a 4s 9d
Pickings ...	Burnt and defective .	3s 3d a 3s 9d
MACE, Bombay ..	Dark to good bold pale .	1s 8d a 2s
	W'd com. dark to fine bold	1d a 6d
NUTMEGS, ,, ...	65's a 81's	2s 11d a 3s 2d
	90's a 125's	1s 5d a 2s
NUX VOMICA	Fair to good bold fresh	6s a 9s
OIL, CINNAMON ...	Ordinary to fair	4d a 1s 3d
CITRONELLE ...	Bright & good flavour..	1s 10d a 2s
LEMONGRASS ...	,, ,, ,, ...	2¼d
ORCHELLA WEED Ceylon ...	Mid. to fine, not woody	11s a 15s
Zanzibar	Picked clean flat leaf ..	12s a 18s
Mozambique	,, wiry	22s a 32s
PEPPER—		
Malabar, Black sifted ...	Fair to bold heavy	2⅛d a 2⅜d
Alleppee & Cochin ..	,, good ,, ...	
Tellicherry, Black ...	,,	
PLUMBAGO, Lump ...	Fair to fine bright bold	15s a 16s
	Middling to good small	3s 6d a 13s
Chips ...	Dull to fine bright	1s 6d a 8s 6d
Dust ...	Ordinary to fine bright ..	2s a 6s
RED WOOD	Fair and fine bold ...	£4 a £4 10s
SAFFLOWER, Bengal	Good to fine pinky nominal	70s a 90s
	Ordinary to fair ...	60s a 70s
	Inferior and pickings ...	30s a 50s
SANDAL WOOD Logs	Fair to good flavour ..	£30 a £50
,, ,, Chips..	Inferior to fine	£4 a £8
SEEDLAC	Ordinary to fine bright	5 s a 100s
SENNA, Tinnevelly ...	Good to fine bold green	3d a 8d
	Fair middling medium	3d a 5½d
	Common dark and small	1d a 2¼d
Bombay .	Ordinary to good ..	1d a 2d
SHELLS, M.-o'-P. .	EGYPTIAN—bold clean	70s a 77s 6d
	medium to thin and stony	35s a 80s
	chicken, part oysters	52s 6d a 77s 6d
large	BOMBAY—poor to fine thin	75s a 82s 6d
medium part stout	clean part good colour	70s a 85s
chicken part stout	,, ,, ,,	77s 6d a 87s 6d
oyster & broken pcs	,, ,, ,,	70s a 85
Mussel	medium and bold sorts	40s a 47s 6d
	small and medium sorts	17s a 30s
Lingah Ceylon	Thin and good stout sorts	0s a 0s
TAMARINDS	Mid to fine black not stony	1s a 11s
	Stony and inferior ..	1s a 6s
TORTOISE-SHELL ...	Sorts good mottle, heavy	24s a 30s
Zanzibar and Bombay	Pickings thin to heavy ..	5s a 22s 6d
TURMERIC, Bengal ...	Leanish to fine plump finger ...	7s a 8s
Madras ...	Fin. fair to fine bold bright	8s a 9s 6d
,, .	Mixed middling	7s a 8s
,, ...	Bulbs	6s 6d a 7s 6d
Cochin ...	Finger	7s a 7s 6d
	Bulbs	5s 6d a 7s 6d
VANILLOES,		
Bourbon, 1sts ...	Fine, cryst'ed 5 to 9 in	22s a 33s
Mauritius, 2nds...	Foxy & reddish 5 to 8 in.	16s a 24s
Seychelles, 3rds ..	Lean & dry to mid. under 6 in. ...	12s a 15s
Madagascar, 4ths...	Low. foxy, inferior and pickings	6s a 10s

THE

AGRICULTURAL MAGAZINE,

COLOMBO.

Added as a Supplement Monthly to the "TROPICAL AGRICULTURIST."

The following pages include the Contents of the *Agricultural Magazine* for January :—

Vol. VII.] JANUARY, 1896. [Nos. 6 & 7.

GRAPE CULTIVATION IN COLOMBO.

M ZANETTI'S letter which appeared in the morning issue of the *Ceylon Observer* of the 22nd November takes a very hopeful view of the ultimate result of the experiment in vine-culture which is being carried on at the School of Agriculture. The ability of the vines to withstand the effects of a copious rainfall—generally supposed to be hurtful to the grape—was put to a severe test by the abnormally heavy rains of October, and it would appear that the plants did not suffer on that account. We recollect when the proposal to grow grapes in Colombo was under consideration, that M. Zanetti stated that in his experience no ill-effects were to be apprehended from a wet climate, provided a proper site was chosen—one in which the soil was porous and did not become water-logged. We understand that in Australia the vine thrives in wet disricts where the physical properties of the soil are favourable to its growth. In a previous issue reference was made to the vines grown by Father Assauw of the Roman Catholic Mission at Wahakotte. These did very well for a time, but are reported to have been ultimately killed out by an excessively wet season. After the late experience at the School of Agriculture, we are inclined to think that it was the tenacious nature of the soil that made it impossible for these vines to make any growth during the abnormally wet season they experienced, for it is well known that the grape cannot thrive in cold and stiff soils that are practically impermeable to water. The Jaffna peninsula is generally spoken of as the most suitable district for vine-culture, but it is questionable whether this has been proved to satisfaction. It is time that there are a number of prolific vines flourishing in the North, but there the enterprising householders would seem to concentrate much of their energy on one or two vines grown on trellises (so to speak, under their very noses), giving them as much attention as any hothouse grapes in England. We have heard that the main difficulty which the Jaffna grape-grower has to face is a water supply for the vines, which for the most part of the year have to be liberally treated with water owing to the extremely dry and arid climate which characterizes the north of the Island. The test as to whether grape cultivation can be made a successful industry in the Jaffna district would be to establish a vineyard of say a thousand plants and see whether anything will come of the experiment. Under the circumstances in which grapes are at present raised there, it would be unreasonable to infer that viticulture as an industry will be a success in Jaffna. There are many trees that we can grow well and force into fruit in our gardens by special attention, though we know that it would absurd to attempt to cultivate them on a large scale and expect remunerative results. Let us take the case of so common a tree as the orange, which is perhaps more frequently found in gardens than any other fruit-tree. With special attention it can be made to thrive almost anywhere and fruit excellently, but there are only a few situations in which one would be bold enough to attempt orange culture. It would seem that the good folk of Jaffna had their attention specially directed to grape growing (as also to the operation of grafting) by an enterprising official ruler with a strong predilection for agriculture, who by the force of his philanthropic nature no less than by the weight of his official influence, persuaded many of his subjects ready to follow his advice and example. (Would that we had more like him!) Indeed, we have heard it said that it is "the *fashion* for every householder in Jaffna to have a grape vine in his compound." So much the more credit for the Jaffna householder for the taste he displays.

We do not, however, mean to affirm that it is our conviction that Colombo is the best place for vine-growing, or even to assert that vine-growing

is bound to be a success in Colombo. Indeed, we have not had sufficient data to go upon to arrive at such conclusions. We can only state that as far as the experiment in vine-growing has gone, the varieties of Australian grapes—some ten in number—which have been planted in the grounds of the School of Agriculture have done remarkably well. We have yet to see whether they will continue to thrive as they have done, and whether the severe pruning which M. Zanetti has given them, in accordance with the system practised in Australia, will suit the vines in their present situation.

We are glad of one result of this experiment, and that is, that many enterprising gentlemen have secured cuttings of the excellent varieties of grapes which M. Zanetti has introduced into Ceylon. Some of these cuttings have gone to Chilaw and Puttalam, which have always been spoken off as suitable places for grape growing. The system of cultivation in connection with the experiment at the School of Agriculture has been to limit the spread of the vine to the accommodation afforded by a standard some 3½ feet high. It will thus have to be seen further whether this system will suit our conditions of soil and climate, in place of training the vines on trellises, the common method in Ceylon. What we should greatly desire is to see some of the best-flavoured varieties of the grape put into the skillful hands of the Jaffna vine-dressers instead of the "wild grape" which is hardly worth the energy which they spend upon its cultivation. This is a matter which the Government Agent of the Northern Province might interest himself in. With the knowledge of the process of grafting which the people of Jaffna possess, some of the introduced varieties of grapes might successfully be grafted on the vigorous stocks to be found in the North.

OCCASIONAL NOTES.

Writing at the end of 1895 we wish all our readers "A Happy New Year," and trust that 1896 has prosperous seasons in store for agriculturists in Ceylon and abroad, and that it will prove to be a year of plenty. For ourselves, we shall make the "fresh resolution" to do all we can, in our own little way, to further the interests of Agriculture in the Island through the coming year.

In less than a month after the pruning of the Vines—referred to in the article on Grape Cultivation—they have again made rapid growth, and, this time a fairly large number have put out blossom, which, if it set, should give a nice little crop early next ye r.

The "Model Farm"—now only so in name—is after a long period of neglect again beginning to look a bit trim. To keep such parts as are not under Mauritius grass in this condition is no easy matter, considering that it has been overrun by that most troublesome of weeds, the Sensitive plant. The new manager, Mr. Samaranayaka, has, however, made a good beginning in clearing away brushwood and cleaning the land, and while gradually extending the cultivated areas, improving such parts as are available for pasture. The extent of the farm is over two hundred acres. There are at present 25 head of cattle from the Government Dairy at grass there. The only objection to the Model Farm—which is otherwise a most desirable site, and indeed a very picturesque spot,—is that a good part of it is liable to go under water at certain seasons of the year, but we will hope that before very long the working out of the flood outlets scheme will remove this defect.

We draw attention to the first part of a paper written by Mr. Mollison, on the management of Dairy Cattle. The writer who rendered such invaluable help at the inception of the Ceylon Government Dairy is admitted to be the best authority on stock in India. We commend Mr. Mollison's paper to the careful attention of all those who have anything to do with milch cattle.

Agricultural science will be much the poorer for the loss of Professor Hellriegel, whose name is so familiar to students of Agriculture, particularly in connection with the subject of the relation of the free nitrogen of the air to plant life.

RAINFALL AT THE SCHOOL OF AGRICULTURE DURING NOVEMBER.

1	..	·07	12	..	Nil	23	..	1·05
2	..	·51	13	..	Nil	24	..	1·07
3	..	Nil	14	..	·02	25	..	Nil
4	..	·42	15	..	Nil	26	..	Nil
5	..	·27	16	..	Nil	27	..	·06
6	..	·15	17	..	Nil	28	..	Nil
7	..	·02	18	..	·08	29	..	·11
8	..	Nil	19	..	·94	30	..	1·53
9	..	Nil	20	..	·04	1st Dec.		·02
10	..	Nil	21	..	·03			
11	..	Nil	22	..	·10	Total...		6·42
						Mean..		·15

Greatest amount of rainfall in any 24 hours, 30th November, 1·53 in.

Recorded by J. D. JAYAWICKRAMA.

RAINFALL TAKEN AT THE SCHOOL OF AGRICULTURE DURING THE MONTH OF DECEMBER, 1895.

1	Sunday ..	·02	19	Thursday ..	1·09
2	Monday ..	Nil	20	Friday ..	Nil
3	Tuesday ..	·2	21	Saturday ..	Nil
4	Wednesday ..	·39 (4th–5th)	22	Sunday ..	·04
5	Thursday ..		23	Monday ..	03
6	Friday ..	Nil	24	Tuesday ..	Nil
7	Saturday ..	·29	25	Wednesday ..	Nil
8	Sunday ..	2·17	26	Thursday ..	Nil
9	Monday ..	·08	27	Friday ..	·01
10	Tuesday ..	Nil	28	Saturday ..	1·29
11	Wednesday ..	Nil	29	Sunday ..	·54
12	Thursday ..	Nil	30	Monday ..	·56
13	Friday ..	Nil	31	Tuesday ..	01
14	Saturday ..	·01	·1	Wednesday ..	·1
15	Sunday ..	Nil			
16	Monday ..	Nil		Total..	7 75
17	Tuesday ..	Nil			
18	Wednesday ..	·92		Mean..	25

Greatest amount of rainfall in any 21 hours on the 8th instant, 2·17 inches.

Recorded by HENDRICK G. DHARMADASA.

THE FEEDING OF ANIMALS.

"It is obvious that so long as a country is sparsely populated and the needs of the people are amply supplied under a comparative rude system of agriculture, in which extended area precludes the necessity for improved methods, there would be little either of scope or of inducement to study economy in the feeding of animals, or systematic practice in regard to it. But as population increases in proportion to area, there arises the necessity for increased production over a given area."—(*Lawes & Gilbert.*)

The condition of native agriculture in Ceylon has been such that the needs of the people have hitherto been amply supplied by a comparative rude system of rural economy. But it is clear that as the population increases and the area under cultivation becomes limited, such a happy state of affairs cannot continue, and unless attempts are made to grow a greater variety of crops, and some attention is given to the such important questions as the manuring of land and the supply of "artificial" food for animals, the lot of the peasant farmer must before long become a very wretched one.

The rude system of managing land and stock at present in vogue will have to be gradually improved, if such a result is to be prevented. To the feeding of animals we are aware that the native cultivator pays little if any attention, allowing the stock under his care to roam about in search of natural pasture and forage for themselves as best they can. But the area under natural pasture is becoming diminished, and even the grass that is found in such land as is yet available has a tendency to become deteriorated. And, indeed, the results of these changes are before us. Years ago, there were many districts in the Island which raised a strong and healthy breed of cattle and buffaloes, and where the cows yielded a fair supply of milk. Any of the older inhabitants of these once-favoured districts will bear testimony to the degeneration that has taken place. Strong healthy bulls and buffaloes are now rarely met with, having been replaced by an unthrifty, undersized breed. The milch cattle now hardly supply sufficient milk to make it worth one's while to draw it. The native cultivator, as is well known, does not recognize the value of cattle manure, and though unable to ascribe a cause, he sees his lands getting poorer day by day. As it is beyond his power to account for this change for the worse, he will alternately blame the seasons and the weather, but it often happens that he is so resigned to his fate that he makes no attempt to discover any cause for the disappointing results of his operations. In some cases, he becomes so despondent, that he loses all energy, and considering it hopeless to attempt to bring about a better condition of things, he disposes of the few cattle he possesses and abandons his bit of land. Now, it is clear that the native cultivator must be made to recognize the necessity for increased production over a given area for the introduction of a variety of crops so as to supply food for man and beast. But it is only gradually that his mind can be trained to think in this way, by instilling into him the principles of the art which he professes to practise. Take the case of the feeding of stock, which is so important a matter, since the success of the agriculturist, particularly in the East, depends so much on the condition and capabilities of his animals. It should be recognised that animals have to be fed differently for the different functions they are expected to perform, whether for the production of meat or milk or manure, or for the exercise of force.

Certain foods are characterised by the presence of some of the essential ingredients greatly in excess of others, so that from an economical point of view and also for producing the best effects of feeding, mixed diets are necessary; and in order to mix foods properly, the composition and cost of various foods should be taken into consideration. But before deciding upon certain mixtures we should keep in view what is expected of the animal, whether milk, meat or energy, and with a full knowledge of the capabilities of the various foods to help in producing these, we should mix accordingly.

(*To be continued.*)

NOTES FROM THE POONA FARM.

I trust the following notes culled on my late visit to the Poona Farm will interest your readers. The Superintendent, Mr. Mollison, so well-known in Ceylon by name, is considered an authority on Agriculture in India.

Of the Improved Ploughs Mr. Mollison prefers the Turnwrest to all the others for general use in India. It is interesting to watch how this plough is worked at the Farm. Two pairs of good strong Gir bulls yoked one pair behind the other are used for drawing it. The ploughing being begun at one end of the field, after each furrow is made the animals are turned short and the next furrow is taken just beside the former one without leaving any space between them, so that the furrow slice from each regularly covers the preceding furrow. Of course at each turn the mould-board and share are turned to the furrow side. The ploughing thus begun at one side of the field is finished right at the other without any unploughed strip of land being left in the middle; and the headlands are ploughed last of all.

2. The Gir bulls used in the plough are the ones kept for breeding purposes. They are worked in the morning and evening and allowed to rest during the middle of the day when the sun is powerful. The animals are all the better for the moderate exercise they get in this way, and are thereby better fitted to do their work as stud bulls than they would be when allowed to remain idle. Besides, when four animals are yoked together, the draught is so well divided among them that the strain on each individual animal is but slight.

3. It must be noted that it is not every breed of bulls that can thus be used uncastrated for draught work especially in the plough. The spirited kinds such as the Mysore and Deccanee are too mischievous to be so used without being converted into bullocks; but bulls of the Gir, Aden and Sind breeds, which are naturally docile and intended for slow work, can be used uncastrated. The Krishna Valley, Malwa and Coimbatore breeds are also noted as plough cattle.

4. The majority of animals in the dairy farm are buffaloes which are preferred, as they yield richer milk than neat cattle, and are therefore

more profitable for making butter. But a good number of Sind cows are kept on the farm, and these are held in great repute as they are by far the best milkers in Western India.

5. The points of a good milker are:—a mild temper, a clean cut head, forequarters light but allowing sufficient room for the heart and lungs, a large belly, well-sprung back ribs, and strong massive hind quarters, thus giving the animal a wedge-shaped appearance when viewed lengthwise from the front. The best signs of milking qualities are, however, to be found in the udder and the milk vein. The latter should be prominent, *i.e.*, easily noticeable all along the abdomen until it disappears at the brisket. The larger the capacity of the udder the better, provided it is not fleshy. It should extend well forward on to the abdomen and come well back between the thighs. The teats should be large enough to permit the milker to take a good hold of them. They should be squarely set in the udder, be of equal size and not grouped together in a cluster but be wide apart. Most of these points are found in Sindh cows, but the only defect in the shape of the udder noticeable in many of them is that it is too pendulous. This, however, is not positive.

6. All the green fodder and hay required for the dairy animals are grown and prepared on the farm itself, only the concentrated food such as oilcake, cotton seed, grains and pulses being purchased. The chief fodder crops raised there are Guinea grass, Maize, different varieties of "Jowari" such as *Sorghum vulgare, Sorghum saccharatum,* "Bajiri," *Penicillaria spicata,* Lucerne and other papilionaceous crops such as *Dolichos uniflorus.*

7. Of these, Guinea grass and Lucerne are the most important, as they are permanent or perennial crops, and are each the best of their own kind as fodder. Guinea grass grows equally well under the shade of big trees such as the mango and banyan as in the open. It also does well in damp situations if there is no stagnant water. If well manured and regularly watered it can be cut ten or twelve times in the year, the mowing being always done as close to the crown of the root as possible. A Guinea grass plantation has to be renewed once in every three years, because the tufts get overgrown in that time.

8. Lucerne ranks first of the leguminous family of fodder crops. If free from disease and properly attended to as regards weeding, manuring, &c., a lucerne field will last for four or more years, and can be cut ten or twelve times in the year. Its worst enemy is a fungoid disease which affects the roots. No remedy is known for this: but prevention must be sought in the selection of land, method of sowing and general care of the crop. It is best grown in a deep friable lime soil on ridges two feet apart, 10 lbs. of seed being used for an acre. It is said that when Guinea grass and Lucerne are grown as a mixed crop, the latter is less subject to fungoid disease.

9. When such cereal crops as Maize and Sorghum are grown solely for fodder, the seed is sown much thicker than when they are intended as grain crops. The quality of the fodder is thereby improved because the stalks grow thinner and more delicate; and further, the outturn per acre is increased. The best time to cut the crops is when they are beginning to flower, as the nutritive properties of the plant are then well distributed throughout the whole plant. Later on the nutrition is more or less centred in the grain and the stems become coarse and woody. When fed on fodder cut before flowering, cattle are apt to get hoven as the crop are too green and watery at the time. Maize grown as fodder is cut when the male flowers appear.

10. Any extra amount of green fodder grown on the farm during favourable seasons is preserved for after use in the form of hay. Guinea grass makes the best hay and next come the Sorghums and Millets. Lucerne is not suited for this purpose because the leaves get very brittle as the crop dries and a large proportion of them falls off and is lost. In hay-making the grass should not be allowed to get quite dry. If a little of the sap is retained a slight amount of beneficial fermentation occurs in the stack, a sweet flavour and fine aroma are developed, and the hay is thus rendered more agreeable to the taste and smell. Care should at the same time be taken that the hay is not stored too moist; for then the centre of the stack will be overheated by excessive fermentation, whilst near the outside the hay will get musty. Hay should be stored under suitable cover and in the Poona farm there is a spacious shed built for the purpose.

E. T. HOOLE.

2nd November, 1895.

THE FERTILITY OF SOILS.

(PROFESSOR KINCH.)

In most published analyses of soils the total amount of nirtrogen and the amount of various mineral matters dissolved by strong hydrochloric acid is stated. Such analyses are useful for some purposes, and in some cases are sufficient to indicate a deficiency of some particular form of plant food, but they by no means indicate the amount of available plant food in the soil. A few analyses have been made by extracting the soil with water charged with carbonic acid gas, and a few in which dilute acetic acid was the solvent used, these being thought to more nearly represent the action of the living plant on the soil. Recently an important advance towards determining the amount of available mineral plant food in a soil has been made by Dr. Bernard Dyer. He examined the juice or sap of the roots of about one hundred different plants, belonging to twenty different natural orders, as far as their total acidity went. No attempt was made to determine the actual acid present in each case, but only the actual acidity of the root sap. This itself is by no means an easy task, and any method used is liable to errors. However, he found that taking the average of the whole number of plants tried the total acidity of the sap came to rather less than that which would be produced by dissolving crystallised citric acid in water to a strength of 1 per cent. of weight of the acid. Some plants of the rose order—viz., *Geum* and strawberry, also evening primrose and thrift, *Armeria,* had a root sap with a higher acidity than this, whilst the root of leeks, some mangels, and some grasses were much less acid. Leguminous plants, white clover, red clover, and beans seemed to develop a much less acid root sap when grown in pots than

when grown in the field; possibly they had less necessity for the acid when in the probably richer soil of the pots. However, Dr. Dyer determined to try the effect of a 1 per cent. citric acid solution on soils of known composition and history to see if this would really act in the same way as the acid sap of the roots on the phosphoric acid and potash of the soil, and so be in some degree, at all events a measurer of the available mineral plant food of the soil.

Soils suitable for testing this point could only be obtained from one place in the world—viz., Rothamsted. Here alone have soils been under exact experiment and observation for a sufficient length of time for their agricultural capabilities to be accurately known. From Rothamsted then, with the kind assistance of Sir John Lawes, were obtained samples of soil from twenty-two of the barley plots in Hoos Field which have grown barley for forty years in succession under various treatments as to manure, and the exact amount of the produce from which each year is known, as well as in many cases the chemical composition of the produce. The weight of the fine soil of the plots, calculated to a depth of 9 inches per acre, varied from about 2 to 2½ million lb. In these soil samples were determined the amounts of phosphoric acid and of potash soluble in strong hydrochloride acid, much as in an ordinary soil analysis, and also the amounts of phosphoric acid and of potash soluble in a 1 per cent. solution of citric acid, which solution was allowed to act for seven days on the soil. The results obtained were very interesting and instructive. Calculating them into lbs. per acre of the soil to the depth of 9 inches, they showed that the plots which were unmanured or received no phosphatic manure contained from 2,500 to 3,000 lb. of phosphoric acid per acre, of which from 140 to 280 lb. were soluble in the dilute solution of citric acid. The soil of plots which had received phosphates in manure contained from about 4,200 to 5,400 lb. of phosphoric acid, of which generally from 1,000 to 1,500 lb. was soluble in citric acid solution. A plot which had received farmyard manure for twenty years, and then been unmanured for eighteen years, contained 512 lb. of phosphoric acid soluble in citric acid per acre in 9 inches of soil; and a plot receiving farmyard manure for the whole thirty-eight years contained 932 lb. of such soluble phosphoric acid per acre. The amount of potash soluble in hydrochloric acid in the soil of unmanured plots, or those receiving no potash in the manure, averaged nearly 3,000 lb. per acre: where potash had been given in the manure it averaged about 6,750 lb. per acre to a depth of 9 inches. But with citric acid solution the comparative results were far different, the potash soluble in a one per cent. solution of citric acid from the soil of plots receiving no potash was almost always under 100 lb. per acre, whilst from the soil of plots receiving potash in the manure it averaged over 800 lb., and was sometimes over 1,000 lb. per acre. The citric acid soluble potash in the farmyard manure plot to which the dung had not been applied for eighteen years was 336 lb. per acre, that in the continuously dunged plot was 669 lb. per acre. Now there is nearly six times as much phosphoric acid dissolved by dilute citric acid solution from the soil of the plots receiving phosphates as from those not receiving phosphates, and nearly nine times as much potash from the potash receiving plots as from those which had received no potash for forty years. If these results of soil analyses are compared with the actual crops of grain and straw obtained during thirty-eight years, it is most clearly brought out that those soils in which citric acid soluble phosphoric acid is low are those suffering from deficiency of available phosphoric acid, and likewise when the potash soluble in citric acid solution falls below a certain limit that the soil and the crops upon it are suffering from deficiency of potash. Thus a plot not receiving phosphates and with 152 lb. of phosphoric acid soluble in one per cent. citric gave a yield in 1889 of 22½ bushels of barley, a plot treated in the same way except that it had 3½ cwt. superhosphate per acre annually in addition, yielded 1,073 lb. of phosphoric acid to the citric acid solution, and gave 35¼ bushels of grain in 1889. Such cases might be repeated many times. In the case of the phosphoric acid it is found that the amount dissolved of citric acid is roughly proportional to, and approximately one half, the amount calculated to be left in the soil from applications of phosphates and not recorded in increase of crop.

From a careful consideration of the whole results, Dr. Dyer concludes "that it would not be unreasonable to suggest that when a soil is found to contain as little as ·01 per cent. of phosphoric acid, soluble in a 1 per cent. solution of citric acid, it would be justifiable to assume that it stands in need of phosphatic manure." This amount would be equal to about 250 lb. per acre to a depth of 9 inches. Again, as regards potash, it is "more difficult than in the case of phosphoric acid to draw from the figures any fairly plausible suggestion as to what percentage limit of citric acid soluble potash should be regarded as marking the non-necessity of special potash applications. *Probably this limit lies below ·005 per cent.*" That is about 125 lb. per acre to a depth of 9 inches. This plan of treatment of soils with dilute solution of citric acid does undoubtedly give valuable indications as to the condition of some of the important mineral plant foods in the soil, and is a decided step in advance in the matter of soil analysis. We are very glad to know that Dr. Dyer is extending his observations to the soils of the celebrated wheat field (Broadbalk) of Rothamsted, where wheat has now grown continuously for more than half a century.

(To be continued.)

CEYLON WOODS.

(Continued.)

111 Myristicaceæ.
169 Myristica laurifolia. Malaboda.
170 ,, irya. Ireya.
113 Lauraceæ.
171 Cryptocarya Wightiana. Galmora.
172 Persea semecarpifolia. Wéwarani.
173 Litsea sebifera Bó-mi.
174 ,, zeylanica. Dawal-kurundu; Kududawulu.
175 ,, ovalifolia.
115 Thymelæaceæ.
176 Gyrinops walla. Walla; Patta-walla.
118 Santalaceæ.
177 Scleropyron Wallichianum. Katu-pamburu.
120 Euphorbiaceæ.
178 Bridelia retusa. Keta-kala.

179 Phyllanthus emblica. Nelli.
180 ,, indicus. Karawu.
181 Hemicyclia sepiaria. Wira.
182 Mischodon zeylanicus. Tammanna.
183 Aporosa lactifolia. Pepiliya, Ma-pat-kebella. Hampotta.
184 ,, lindleyana. Kebella.
185 Dimorphocalyx glabellus. Weli-wenna
186 Mallotus albus. Bu-kenda.
187 Macaranga tomentosa. Kenda. Pat-kenda.
188 Chætocarpus castanocarpus. Hedawaka, Hedoka.
121 Urticaceæ.
189 Holoptelea integrifolia. Goda-kirilla.
190 Celtis cinnamomea. Gurenda.
191 Trema orientalis. Gedumba.
192 Streblus asper. Geta-netul.
193 Ficus tsiela. Elanuga, Ehetu.
194 ,, glomerata. Attikka.
195 Artocarpus nobilis. Del, Wal-del.
196 ,, integrifolia. Kos.
123 Coniferæ.
197 Cryptomeria japonica.
198 Cupressus semperoireus.
139 Palmæ.
199 Areca catechu. Puwak.
200 Caryota urens. Kitul.
201 Corypha umbraculifera. Tala.
202 Borassus flabelliformis. Tal.

THE MANAGEMENT OF DAIRY CATTLE.

By Mr. James Mollison,

Superintendent of Farms, Bombay Presidency.

The constitutions of milch kine at time of parturition are delicate. Indian cows and buffaloes, although in a sense hardier than other milk breeds, are no exception to the general rule. Special care should at this time be exercised in providing suitable food and other comforts. If a cow or buffalo gives birth either during the monsoon or in the cold season, the animal must be protected from inclemency of weather. Experienced breeders will provide comfortable shelter during the wet days of the rainy season or the chill nights of the cold weather. A cool shady place will also be found for a newly-calved cow in the hot season. A recently-calved cow should not be turned out to pasture in the blazing sun and high day temperature of March, April and May. This practice must be deprecated even in the cooler parts of India. During the time a pregnant milch animal is "dry," which unfortunately (specially as regards the buffalo) is rather a lengthy period, the cow should be kept in good, but not high condition. A good pasture, well supplied with pure drinking water and shady trees, will ordinarily maintain in-calf cows in good condition. But when the natural pasturage fails, supplementary food of nutritive quality must be given. A full yield of milk during the next period of lactation need not be expected if the precaution referred to has been neglected. Beyond this a fairly liberal allowance of concentrated food must be allowed for at least six weeks just before calving. There is a very great variety of foods suitable and available for Indian milk cows. In the Deccan, kadbi (*i.e.*, Jowari, *Sorghum vulgare*, straw) or hay of fair nutritive value are the usual dry fodders; whilst various oil-cakes, cotton seed, dál (*Cajanus Indicus*) husk (chuni) and wheat bran are the more common concentrated foods. Sesamum cake is perhaps the best procurable oil-cake. *Khurásni* or niger-see cake, though rather objectionable in appearance, is considered a safe and nutritive food. Safflower or *kusumbi* cake, although rather indigestible owing to the presence of a considerable percentage of fibrous husk has an advantage over other cakes, in that it can be bought at a season when it is cheap and thereafter safely stored. It neither moulds nor turns rancid on keeping. Cattle have to get accustomed to it, however, before they eat it greedily. Four to 6 lbs. per day of equal weights of oil-cake and bran, in addition to a fair allowance of dry fodder for the six weeks before calving, will keep a dry buffalo thriving. Less will suffice for a cow. A fortnight before calving, the quantity of concentrated food may, with advantage, be increased to 8 lbs. per day. The object is to supply the pregnant animal with concentrated food of a character which will not only exercise a slight laxative effect but will also improve the condition, so that free lactation may be expected soon after parturition. If in good condition, a full yield of milk forced by extra feeding will not debilitate the animal as would be the case if lean, when due to calve. For a week after calving, the feeding of the cow should receive close attention. The food should be of a laxative character and should not be too rich. Cotton seed, oil-cake and *chuni* (husk of *Cajanus Indicus*) should be at this time eschewed. There is no better food for a newly-calved buffalo cow than a mash consisting of boiled *bájri* (*Pennisetum typhoideum*) to which has been added an equivalent weight of bran whilst the cooked *bájri* was still hot. Five pounds each of *bájri* and bran will, with the ordinary allowance of dry fodder, provide sufficient ration for a day. Two oz. of salt added to the mash will make it all the more palatable. Good fresh green hay is at this time preferable to *kadbi* (*jowari*, *Sorghum vulgare*, straw) and if a limited allowance of green fodder, say 15 lbs. per day, can be given, the ration will be improved. Thus the ration for a day of a newly-calved buffalo would consist of—

8 to 12 lbs. of good hay.
15 lbs. of green grass or other green fodder.
5 lbs. bran ⎫ as a
5 lbs. *bájri* (*Pennisetum typhoideum*) ⎬ hot
2 oz. salt ⎭ mash.

A cow should receive about ⅔rds of this ration.

Immediately after calving, a hot drink made up of a thin gruel or *kánji* of ground *bajri* and bran with a handful of salt tends to cause the after-birth to come away quickly.

In Europe, deep milking cows are liable to milk fever which is most prevalent among heavy milking cows producing their 2nd or 3rd calf. As a preventive, should there be any risk of milk fever, the cow is drenched with linseed oil and Epsom salts repeatedly during the week before calving. The practice, which does not seem to be necessary with Indian cattle, simply because they are generally poor milkers, is effective, because the laxative medicine keeps the bowels open and prevents any undue secretion of milk. Under the most favourable conditions an Indian cow or buffalo will not yield the full quantity of milk for a week or 10 days after giving birth. Then the full yield may be expected and ordinary food may be given. A buffalo in full yield requires to be specially well fed. I do not think, however, that any quantity beyond 18 lbs. per

day of concentrated food will increase the milk yield appreciably. A moderate-sized buffalo giving over 30 lbs. of milk per day (a quantity sufficient to make 3 lbs. of butter) need not get a larger ration. Any extra quantity of food would be wasted. A large framed Jáfferabad buffalo requires a larger ration than the smaller sized Surat buffalo; and moreover the former in the Deccan are less profitable, because they require a greater quantity of concentrated food and fodder to produce a given quantity of milk. Similarly a Gir cow, because usually of large size, requires to be more liberally fed than the smaller sized Aden. The latter I have found to give an equal yield of milk to larger breeds on such less food. It is clear that no hard and fast lines can be laid down regarding the feeding of cows and buffaloes in milk. An experienced stock owner will very soon determine the quantity of food that can advantageously be given to any one of his cows or buffaloes. With good management either a good cow or a good buffalo will, in India, milk up to the full capacity for four or five months after calving, and during this period there should be little or no change in the daily ration. A milch animal has a palate, however, and occasional variety in the food is often desirable. If milk cows are fed from month to month with precisely the same food they sooner or later may reject it altogether or eat it with less greed and relish. An occasional change in the ration is, therefore, expedient. For this purpose dál (*Cajanus indicus*) husks (chuni), if not regularly given, can with advantage be substituted twice a week for part of the other food and occasionally crushed linseed ¾ lb. per animal, per day, may be similarly given.

A milk register will, if carefully kept, show at once when the milk yield begins to diminish. A daily record of the milk yield of each animal furnishes useful data. A glance at the figures will show when there has been any irregularity or disturbing cause to re-act on the milk yield. Moreover, if carefully kept, it is a true guide as to the value of different animals. One cow may milk well to begin with, but the yield rapidly diminish. Another cow may yield steadily for a long time and be much the more valuable and profitable animal of the two, although producing at no time an abnormally high yield. The milk register will also indicate whether the management of the cows has been good, and moreover furnish data which will enable the farmer to discard one cow whilst he retains another because the latter has been proved to be the more profitable.

When the peroid of lactation has somewhat advanced and there is evidence of a lessening milk yield, the ration should also be diminished. It may be necessary to change the food at least once a month. The change will be regulated to some extent by the size and condition of the animal, but the main consideration is how much milk did the cow give during the previous month. An average buffalo giving 18 lbs. of milk per day and suckling her calf should have the ration noted below. I have found it both good and liberal:—

Dry fodder	15 to 20 lbs.
Cotton seed	4 ,,
Bran	4 ,,
Oil-cake	3 ,,
Chuni (husk of *Cajanus indicus*)	3 ,,
Salt	2 oz.

The cotton seed, *chuni* (husk of *Cajanus indicus*) and bran with salt added should be moistened. The oil-cake, broken into pieces, at most an inch in diameter, may be placed on the top of the moistened mass but not mixed through it. The concentrated food should be given in two meals and at milking times. This is perhaps a bad practice which, however, cannot be avoided. Indian buffaloes and cows have been so accustomed to get the food whilst being milked that without it they refuse to let the milk down. The enjoyment of eating doubtless induces a placidity of disposition at the time which premits the *gavli* (milkman) to milk rapidly and extract more milk than he otherwise would, especially from those animals which are unusually irritable and fractious. Two-thirds of the dry fodder should be given at night, the remainder in the forenoon. The cows should be milked at regular stated hours, and there should be no deviation therefrom under any circumstances: 6 a.m. and 5 p.m. are suitable hours. The concentrated food is usually given in two equal meals at these times. The cows should have free access to pure water three times a day. Buffaloes should be bathed or washed at least once a day. During the period that good grazing is available the dry fodder may be reduced to 6 to 8 lbs. given at night and the concentrated food reduced by ⅓ or if green food is available in reasonable quantity all the year round, it may be soiled to stall-fed cattle. A large buffalo may be allowed up to 40 lbs. per day of green food, and 6 or 8 lbs. of hay in addition, together with the concentrated food ration already noted. Usually 15 or 20 lbs. of green fodder per day is all that can be allowed. This quantity may be substituted for 8 or 10 lbs. of hay.

AILMENTS AND DISEASES OF THE HORSE.

BOG SPAVIN.—This disease resembles a windgall in its character, and is situated inside the hock joint. For practical work it is of no great consequence; it is, however, an unsightly sign of local weakness that pulls down a horse's value.

CAPPED HOCK.—Capped hock is due to kicking in the stable or in harness, or from standing and slipping in badly-paved stables. *Treatment.*—Cold water and friction; hobble the hind legs if a kicker.

SANDCRACK.—This is generally a crack from the coronet down the hoof. *Treatement*—Pare out the crack and cut off the crack above and below, by searing with a hot iron; rest, and keep the crack clean with antiseptic lotion.

SEEDY TOE.—This is a parting of the crust of the coronet from the soft horn at the toe of the foot. *Treatment.*—Send for a good furrier or vet.

NAVICULAR DISEASE.—Navicular disease of the foot is very serious, and is ulceration of the interior of the hoof. The symptoms are great lameness. There is always likelihood of recurrence when the horse is worked. *Cause.*—Blows or bruises on the sole; concussion; heredity. *Treatment.*—Hot baths for the feet; hot swabs; perfect rest for some months and a cooling diet.

LAMINITIS.—Laminitis, or fever in the feet, may come on suddenly after a hard day on hard

ground. The symptoms are great pain in the fore feet, and a continual endeavour to get the weight off the fore feet, which are thrust forward. *Cause.*—Concussion; galloping on a hard road.—*Treatment.*—Sling the horse, if possible, to stable beams with ropes to take the weight off the fore feet, placing a ring under the body; or use a pair of cart shafts. Remove shoes by soaking its feet in hot water; and if necessary send for a vet.

SCOUR.—This disease is very common in foals, and serious if it lasts more than a few days. If scour continues, attend to the feeding of the mare with care, and give the foal two tablespoonfuls, from time to time, of 2 oz. of camphor dissolved in 2 oz. of spirits of wine diluted in about half a pint of water. With this simple remedy I have saved the life of a foal almost reduced to its last gasp.

BROKEN KNEES.—*Treatment.*—Keep the wound clean, and bathe constantly every hour with arnica lotion. If badly broken, send for a vet.

SORE WITHERS AND BACK.—*Treatment.*—Complete rest till quite healed and sound is the only way. When there is an abscess or fistulous tendency, send for a vet.

BRUSHING BEHIND.—This is generally due to weakness. Young horses very often grow out of it. *Treatment.*—On the first symptoms, before the skin on the fetlocks is injured, put on a cloth boot tied about the joint so that it falls over the joint, and see that the hind shoes are slightly within the hoof on the inside, so that they cannot cut.

BRUSHING IN FRONT OR SPEEDY CUT.—*Treatment.*—If a habit, sell as soon as possible

THRUSH.—The symptoms of common thrush are soft or rotten condition of the frog, with a fetid discharge from the cleft, which cleft is absent, or nearly so, in the healthy foot. *Cause*—Due to contracted feet, or standing on rotten litter. *Treatment.*—Careful shoeing and paring of rotten parts; constant washing and attention to litter; and a temporary introduction of Stockholm tow and tar into the cleft, with or without one part to ten of sulphate of copper. The cleft which appears with thrush will extend if neglected. To avoid thrush, the litter in the stable should be kept dry and clean. If it is desirable to save straw, great economy may be practised by the use of sawdust, which can generally be obtained at a nominal price. When this is spread thickly, all droppings removed daily, and the sawdust raked over every morning, it forms a clean, wholesome, and cheap substitute for straw, and does not require renewing for weeks. Sawdust manure is good for all soils on arable lands and can be applied conveniently for top-dressing, or ploughed in with any crop, so that farmers who require their straw may use sawdust without hesitation. Tan and sawdust mixed also make an excellent bed.

ACUTE THRUSH.—*Cause.*—"Stopping" the feet with cowdung, clay, and other beastliness, is often the cause of thrush. *Treatment.*—Fomentations, poultices, antiseptic lotions, mashes, green food, constant washing of the feet.

SPLINTS.—*Cause.*—Bony deposits that come from or are the results of blows, accidents, or concussion on the foreleg below the knee, also hereditary in tendency; and are the cause of lameness or not, according to their situation. If situated near a tendon or the knee joint, a splint may be serious. A small splint often gives more pain while growing than when formed. *Treatment.*—Rest and cold water. If there is heat and inflammation, fomentations and poultices. If the splint does not yield to this treatment, blister. In bad cases the splint can be removed by a surgical operation.

RINGBONE AND SIDEBONE.—The following are the symptoms of this disease:—A filling or rising of the hoof; inability to flex the pastern joint. *Cause.*—Heredity. *Treatment.*—Poultice: rub in iodide of lead ointment.

A. E. PEASE.

ASTRINGENT BARKS.

We publish below a statement, which may be found of use to many readers, of barks used in tanning, analysed by the Madras Government Quinologist, Mr. David Hooper. Some mentioned in the list are now used, and others not at present used have been tested with a view to their probable future application. A tan bark should have two natural properties. In the first place it should contain a tannic acid, or modification of that substance, giving a greenish coloration or precipitate with salts of iron; and to make it commercially valuable it should contain a large quantity of tannic acid. The Australian acacias and eucalypti are said to afford barks containing a large percentage of tannic extract, and are consequently greatly esteemed by tanners. The barks of the Indian acacias are also largely used for tanning purposes, and a few cassia barks are also used similarly, while a few have a reputation for dyeing. The investigation of other astringent substances shows that India is not limited to a few drugs of their description, and the list given below might easily be extended.

The best bark is that of the *Anogeissus latifolia*, which is closely followed by the guava bark and the hill guava bark. The eugenias and the guavas belong to the same natural order, and their barks compare very favourably with the eucalyptus barks. The table appended gives the amount of pure tannin in each bark, the amount of extract obtained by exhausting the powder with hot water and evaporating to dryness, the amount of ash or mineral matter left on incineration, and the color reaction the decoctions of the barks afford with iron salts. The bark of the *Anogeissus latifolia* has hitherto been supposed to be one of the most astringent; but recently there has been found a bark much richer in tannin and obtained from the *Bridelia montana*, which belongs to the Euphorbiaceæ order, and is common on the ghâts of the Nilgiris and also in other parts of India. It is well known as a most valuable astringent in Western India and is used by the Goanese in certain diseases.

It seems strange that the tanners of this country do not seek drugs very rich in tannin, for they principally use the bark of the *Cassia auriculata*, which contains only eleven per cent of tannin. The bark of the Casuarina is used in Madras both for dyeing and tanning purposes, and the Myrica Nagi bark is used by Mahomedans and Hindoos in medicines where astringents are required. The Australian acacias or wattle, introduced many years ago on the Nilgiris, have firmly established themselves and are a source of annoyance in the towns. Yet nothing is done to

collect the bark as a commercial article. The common forms of wattle (*A. melanoxylon* and *A. dealbata*) are more plentiful on the Nilgiris than the species *A. decurrens* and *A. pycnantha*, which yield rich tanning barks; but wherever the better species have been planted they have grown vigorously and well, and the bark is equally rich in tannin as that from trees growing in Australia. A sample of bark from *A. decurrens* grown on the Nilgiris was forwarded to London, and it was stated that the sample was in good condition and rich in tannin. Mr. Hooper also made extracts or "Tannage" from these wattle bark preparations which hold the virtues in a concentrated form, and is much better than the crude bark for exporting. There is a good market in Europe for well-prepared wattle bark extract, and the demand has been on the increase during the last few years. The following are the tables referred to:—

(We have slightly curtailed the statement appended to the above which is taken from the *Indian Agriculturist*, and instead of the common English and Hindustani names give the vernacular names by which they are known in Ceylon).

			Tannin.	Water.	Ash.	Colour with Iron Salts.
1	Anogeissus latifolia	Dawu S, Vekkali T	32·5	33·0	9·6	Blue-black
2	Psidium guyava	Pera S	27·4	33·0	10·0	do
3	Acacia leucophlea	Maha-andara, Katu-andara S, Velam T	20·8	29·4	7·5	Greenish
4	Acacia Arabica	Kari-velam T	20·5	30·4	7·9	do
5	Rhodomyrtus tomentosa	......	19·5	30·4	9·0	Blue-black
6	Cicca disticha	......	18·1	30·0	16·4	do
7	Bassia longifolia	Mi S, Illupai T	17·0	27·3	9·4	Greenish
8	Mangifera indica	Amba S	16·7	32·1	6·3	do
9	Eugenia arbottiana	......	16·1	25·0	5·3	Blue black
10	Terminalia arjuna	......	16·0	23·0	34·6	do
11	Saxifera ligulata (root)	......	14·2	0·0	12·8	do
12	Cassia fistula	Ehela S, Kovani T	12·9	27·5	8·1	Greenish
13	Eugenia jambos	Jambu S	12·4	20·7	8·4	Blue-black
14	Eugenia jambolana	Ma-dan S, Naval T	12·0	16·6	9·1	do
15	Eugenia montana	......	11·9	20·1	6·0	do
16	Cassia auriculata	Ranawara S, Awari T	11·9	22·3	4·1	Greenish
17	Mimusops hexandra	Palu S, Palai T	10·3	32·7	7·5	do
18	Eugenia calophyllifolia	......	10·1	15·5	8·0	Blue-black
19	Mimosa pudica (root)*	Midi, Nidi-kumba S	10·0	16·0	5·5	do
20	Cylista scariosa (root)	....	9·9	23·0	9·3	do
21	Schleichera trifuga	Kon S, Puva Kula T	9·4	23·2	10·1	Greenish
22	Odina woodier	Hik S, Othi T	9·1	15·1	9·3	do
23	Acacia pennata	....	8·8	14·2	14·1	Black
24	Careya arborea	Kahata S. Arimaru	8·7	10·3	10·6	Blue-black
25	Hiptage madablota	Puwak gediya-wel S	8·5	15·3	7·6	Green
26	Elœodendrum glaucum	Neralu S, Pieri T	8·0	18·4	18·1	do
27	Albizzia lebbek	Mara S, Mauchadi T	7·4	12·1	9·0	Greenish
28	Potentilla leschenaulti (root)	.....	7·4	0·0	6·4	Blue-black
29	Litsæa zeylanica	Dawul-kurundu S	7·3	22·5	3·6	Greenish
30	Terminalia glabra	Kumbuk S, Marusu T	7·2	11·1	12·1	Blue-black
31	Mimusops elengi	Munamal S, Muchalai T	6·8	20·3	9·4	Greenish
32	Cassia roxburghii	Ratu-wa S, Vakai T	6·1	17·4	6·0	Brown
33	Thespesia populnea	Suriya S, Puwarasu T	6·0	15·8	13·2	Blue black
34	Litsæa Wightiana	......	5·8	14·0	7·7	Green
35	Saraca Indica	Diya-ratambala S	5·7	10·2	10·8	Greenish
36	Cassia florida	Wa Aramana S, Wage T	4·1	11·6	9·6	Brown
37	Acacia Farnesiana	Siniya S	2·8	10·5	8·9	Greenish
38	Zizyphus vulgaris	Masan S	2·8	7·8	16·6	do
39	Rhamnus Wightii	......	2·6	0·0	9·5	do
40	Bridelia montana	......	39·9	41·7	7·3	Blue-black
41	Acacia pycantha	......	33·8	46·7	3·5	do
42	Acacia decurrens	......	33·4	44·8	3·2	do
43	Kandelia Rheedii	......	27·4	45·5	9·1	do
44	Acacia melanoxylon	......	26·8	34·2	4·1	do
45	Macaranga tomentosa	Kanda S	18·4	22·2	11·0	do
46	Casuarina Equisetifolia	Kasa S, Chowkka T	18·3	22·1	9·5	do
47	Acacia dealbetta	....	17·8	32·1	5·3	do
48	Ficus racemosa	......	14·1	20·5	12·2	Greenish
49	Myrica nagi	......	13·7	27·0	7·1	Blue-black
50	Dyospyros embryopteris	Timbiri S, Panichikai T	12·4	19·9	4·9	do
51	Ficus Indica	Nuga S, Al T	10·9	17·2	8·0	Greenish
52	Fleaggea leucopyrus	....	10·3	20·5	3·5	Blue-black
53	Ficus religiosa	Bo S, Arasu T	2·8	12·3	11·7	Greenish

* The common name of this is given as the "Manilla Tamarind" and the botanical synonym as Inga dulcis, commonly known in Ceylon as the "Madras Thorn," which is evidently the tree meant and not the sensitive plant (Mimosa pudica).

PREVENTION OF PLANT DISEASES.

In all civilized countries the respective Governments have thought it fit to enact laws to prevent the introduction or spread of animal diseases, particularly epizooties. There is no doubt that these acts and laws are based at least in their principle on laws regulating the preservation of the health of man. The necessity for the introduction of laws for protecting animals from disease has been greater than exists in the case of man, since man is able to act for himself, and where he recognises danger he usually takes the first opportunity to avoid it. In the case of animals, there is little doubt that if they are allowed to have their own way their instinct would guide them and (as far as that is possible) to protect themselves from the ravages of epizootsie.

But they are domesticated and have to live in limited areas provided for them by their owners housed and fed according to "artificial" laws. Hence the laws that have been enacted to protect animals from infectious diseases whenever they occur, have in all cases resulted in much good to the animals and have reduced their mortality to a great extent.

But we are aware that plants too are liable to various forms of diseases, some caused by deadly fungi, others resulting on the attack of different kinds of insects. Many of these spread far and wide and destroy not only whole crops but even devastate large areas of land.

The fact that plants are stationery places them at the mercy of their enemies, and according to the degree of their helplessness, the means for protecting them should be increased. But in this respect the vegetable kingdom has been to a great extent neglected. Here in Ceylon we have had a sad example of the ravages of plant diseases in the history of Coffee cultivation. Our paddy-fields are in some districts attacked by the fly or bug and destroyed wholesale. Insects of various kinds prevent the successful raising of Cotton, and pests are beginning to interfere to some extent with tea. The coconut beetle has become a thorn in the path of the owners of palm plantations. If proper measures are taken to prevent the introduction and spread of the agents that do damage to plant-life, the revenue from agricultural pursuits should be more than doubled, while every agriculturist, and particularly the poorer class of cultivators should have great cause for thankfulness. The Australian Colonies have indeed passed acts and made orders and regulations to prevent the introduction and spread of plant pests. Under these acts the introduction of plants from other countries is regulated, and measures are enforced to control the spread of any pest which may break out in the Colony. An orchard or garden found to be infested is proclaimed an infected area, as it would be done here, if cholera or cattle plague was prevailing in a particular area. The owner of such a garden has to clear his land of such parts of trees, dry twigs, &c. as would harbour the particular pest and to keep the premises free of weeds &c. Besides, every owner is bound to report the occurrence of disease and to follow the instructions for their suppression as ordered by the inspectors appointed by Government. The importance of this subject is so great, though it appears slight at first sight, that it is not too early to adopt some such percautionary measures in this country, particularly so as almost all our chief products are subject to attack by some form of plant pest.

W. A. D. S.

NOTES ON RECENT RESEARCH ON THE FEEDING OF ANIMALS.

A maintenance diet for oxen at rest—that is a ration on which oxen at rest are able to live but are not able to put on fat—has been found by Dr. Gustav Kühn of the famous German Experimental Station at Möckern, to consist of 7 lb. of digestible albuminoids or protein matter, and 6·6 lbs. of digestible non-nitrogenous matter per 1,000 lbs. live weight. This closely agrees with Henneberg and Stohman's maintenance diet, viz., ·6 of protein and 7 lb. of digestible non-nitrogenous matter. Dr. Kühn found that when this ration was exceeded by less than ·5 lb. of digestible protein the animal laid on fat and flesh.

With regard to the influence exerted by the different nutrients (nitrogenous and non-nitrogenous respectively), it was found that when the protein of the ration was increased by the addition of gluten or other nitrogenous nutrients, no more albuminoids were stored in the body than when an equal amount of organic matter containing only a small percentage of protein was used. That is to say, the putting on of flesh depends more on the amount of non-nitrogenous nutrients in the food than on the amount of nitrogenous nutrients. This is doubtless to be explained by the well-known fact that carbo-hydrates—that is, non-nitrogenous nutrients—act as "albuminoid conservers." They prevent the albuminoids from being used up, and thus permit them to be utilised in their specially characteristic function as "flesh-formers." It was further found that every increase of the nutrients above maintenance diet was followed by the production of fat in the body, and that for this production it made no difference whether the excess of nutrients over the maintenance diet consisted of nitrogenous or non-nitrogenous nutrients.

Among the other points brought out by these important researches, is the fact that no storage in the body can take place except when the food contains more nutritive material than is required for the maintenance of the animal. This fundamental principle of feeding is, of course, well known, but it is pleasing to find it corroborated by these careful experiments. They also bring out the fact, previously known, that, where animals are fed with an excess above the maintenance diet, no exact constant relation between the excess of nutrients and the storage of fat can be expected. This is on account of the individuality of the animals. Making due allowance for this variability, due to individuality, Dr. Kühn's results, on an average, may be said to show that for every one pound of excess over maintenance diet of digestible organic matter, ·24 lb. of an increase of fat should be obtained. Thus, 1 lb. of starch meal in excess of maintenance diet yielded on an average ·2 lb. of fat. How much of this was directly formed from the starch, and how much was the result of its conserving action, cannot be stated, but the experiments seem to bear out that carbo-hydrates can go to form fat.

Changes of the food of cattle should always be gradual. Another point to be remembered in the feeding of animals is to take care that the food is not affected by mould which so commonly happens in tropical countries in wet weather. Dr. Ostermann records a case where three cows became ill, two of them afterwards dying, on a farm where about 1½ lb. of cotton seed meal were fed per head per day to the stock. The disease was characterised by the presence of very great weakness. Externally, the cotton seed meal seemed all right, but on analysis it was found to contain highly poisonous putrefaction production (ptomines.) Dr. Siebert records a

similar case in which very mouldy rape-cake was fed to horses. The symptoms were unnatural redness of the lining of the mouth, hurried breathing and pulse. At this time the rape-cake had only been fed for two days. The animals recovered when the food was changed, without any further treatment. It is clear, therefore, that artificials should only be fed when they are sweet and free from mould, and should be stored with great care. Where there is the least ground for suspicion in cases of the kind, steaming should be resorted to.

GENERAL ITEMS.

The following remedy is recommended for the riddance of the guava coccus pest which produces a blackened condition of the leaves and twigs. It is said to be even more effectual than paraffine emulsion:—

Resin	.. ..	20 lbs.
Caustic soda (98 %)	..	4 ,,
Fish oil	.. ..	3 ,,
Water	.. ..	80 galls (imp.)

Place the materials in a kettle, cover with water and bring to a boil, stirring the mixture occasionally until a solution is formed, and adding *hot* water when there is a tendency to slop over. Boil for three hours, gradually adding hot water until half of the whole quantity or 40 gallons is in the kettle. Then remove from fire and strain. This may now be diluted to 80 gallons with cold water for use, but while the wash is being boiled, cold water should never be added for fear of precipitating the resin. The wash should be warm when applied to the trees. Four pounds of soft soap may be used instead of the fish oil.

"Flame trees" is the popular name given to trees with brilliant flowers which in most cases appear before the leaves, and when seen at a distance have the appearance of being on fire. The principal trees of this nature are amherstia, nobilis, bombax malabaricum, butea frondosa and superba, cœsalpinia pulecherrima, cochchlospermum gossypium, lagerstrœmia flos-reginae, poinciana regia, pterospermum accrifolium, rhododendron arboream.

According to a French paper a substitute for gutta-percha can be prepared as follows:—Tar, 1 part; paraffine, 10 parts; dissolve together at 120 degrees and then add caoutchouc, 2 parts. Keep at this temperature until a homogenous mass results.

According to Prof. Church in 100 parts of cleaned rice there are of water, 12·8: albuminoids, 7·3; starch, 70·3; oil, ·6; fibre, ·4; and ash, ·5. Of this ash, the potash forms no more than ·065 % of the rice, phosphoric acid ·284.

Ceylon moss (*Gracilaria lichenoides*) as examined by O'Shaughnessy, yielded vegetable jelly 54·5 per cent, cellulose 18 %, gum 4 %, and inorganic salts 7·5%.